Title: Meehan's Monthly, v. 5

Place of Publication: Phila. PA

Copyright Date: 1895

Master Negative Storage Number: MNS# PSt SNPaAg109.5

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Volume 5, 1895

MEEHANS' MONTHLY.

A Magazine of Horticulture, Botany
and kindred subjects.

CONDUCTED BY

THOMAS MEEHAN,

FORMERLY EDITOR OF THE "GARDENERS' MONTHLY," AND AUTHOR OF THE "NATIVE FLOWERS AND FERNS OF THE UNITED STATES." VICE-PRESIDENT OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA. BOTANIST TO THE PENNSYLVANIA STATE BOARD OF AGRICULTURE, ETC.

ASSISTED BY

THOMAS B. MEEHAN, J. FRANK MEEHAN, S. M. MEEHAN.

Volume V,
1895.

ILLUSTRATED WITH COLORED LITHOGRAPHS,

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GERMANTOWN, PHILA., PA.

Preface to Volume V.

WILD FLOWERS and general gardening comprise the field MEEHANS' MONTHLY proposes to cultivate. Wild flowers are placed first, as it is the first love with all of us. Before we can scarcely walk, the buttercups, the daisies and the dandelions attract us. Hatsful, capsful,—we never tire of gathering and bringing them as priceless gifts to our parents at our homes. Later on, as we grow in strength, we plant them,—and, with many of us, among the pleasantest recollections of our early years, are the little patches of ground, with our pansies and violets which we were allowed to tend with our own childish hands

Men and women are but children of a larger growth. Wild flowers and gardening carry us through life side by side with the pleasures of our early years. Many of us bearing, perhaps uneasily, the burden of life, wish that we were children again, and that our pleasures might be as free from care as childhood's pleasures are. MEEHANS' MONTHLY is working all in this line. Another year of effort has come to an end. We know that those who have been with us from month to month have enjoyed the journey. We can now only hope that those who may for the first time peruse this bound volume, will have a share in the same joy.

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DARLINGTONIA CALIFORNICA.

DARLINGTON'S PITCHER PLANT.

NATURAL ORDER, SARRACENIACEÆ.

DARLINGTONIA CALIFORNICA, TORREY.—Calyx without bracts, of 5 imbricated, narrowly oblong sepals, persistent. Petals 5, ovate-oblong, erect, with a small ovate tip answering to the blade, and a larger oblong lower portion answering to the claw. Stamens 12 to 15 in a single row; filaments subulate; anthers oblong, of two unequal cells, turned edgewise by a twisting of the filament, so that the smaller cells face the ovary. Ovary somewhat top-shaped, the broad summit being truncate or concave and abruptly dilated, higher than the stamens, 5-celled; the cells opposite the petals; style short, 5-lobed; the lobes short-linear or club-shaped, recurving; stigmas thickish, introsely terminal. Capsule loculicidally 5-valved. Seeds very numerous, obovate-clavate, thickly beset with soft slender projections. A single species. (Brewer and Watson's *Botany of California*.)

This is probably one of the most wonderful productions of the hand of nature. Not only is the structure of the plant in a measure unique, but its whole behavior seems a contradiction to general experience. Flowers, as a rule, may be said to be in love with insects. In many cases they are at least fast friends,—and many of the processes necessary to the very existence of plants, are made dependent on insect agency. But in *Darlingtonia* we have a case where the whole course of its life is spent in collecting and destroying these creatures. It is not, indeed, known whether the flower derives any assistance from insects in the pollination of its flowers. The insects, however, if they could have thoughts might congratulate themselves on the fact, that their enemy has not been able to make its way very widely through the world. It is believed that the object of the plant in entrapping insects, is that they may serve as food,—but as there is abundance of food such as plants normally require, the use in the great economy of nature of insect-devouring plants, is not apparent. Such seeming contradictions in nature are not uncommon. As Percival makes one of his characters say in "Prometheus"—

Rapture is not the aim of man; in flowers
The serpent hides his venom, and the sting
Of the dread insect lurks in fairest bowers;
We were not made to wander on the wing,
But if we would be happy, we must bring
Our buoyed hearts to a plain and simple school;
We may, as the wild vines their tendrils fling,
And waste their barren life, o'erleap all rule,
And grasp all light, till age our fruitless ardor cool.

In so far as the history and peculiarities of the plant are concerned, no better account has been given than that by the authors of the "Botany of California," which is here transferred. They say it grows in "mountain swamps and borders of brooks, at 1,000 to 6,000 feet, from Truckee Pass to the borders of Oregon; first collected near Mount Shasta, by W. D. Brackenridge, of the Wilkes Exploring Expedition party, with foliage and vestiges of fruit, and next, in blossom by Dr. G. W. Hulse. The 'pitchers' are 18 to 34 inches high, and an inch or less in diameter, except near the top, tapering downward, and spirally twisted about half a revolution, the twist being most often to the left. Expanding near the summit it is vaulted into an inflated sac or hood 2 to 4 inches across, with a circular opening an inch or less in diameter on the under side. The dome of this hood is spotted with large, thin, translucent areolæ, which are usually colored somewhat orange or yellow. A wing two to four lines wide runs along the inner side of the pitcher, clasping the rootstock below and entering the orifice above. At the upper and outer edge of the orifice, a blade or appendage arises which is narrow at its base, but rapidly widens and divides into two equal and divergent lobes. It is something like a fish-tail in shape, spreading 3 or 4 inches pointing downward, and beset with sharp and short stiff hairs, all pointing toward the orifice, the lobes twisted outward about half a revolution. The green of this blade is variously blotched with red and yellow. The interior of the pitcher is polished above, but the lower part is beset with stiff, sharp, slender, transparent hairs pointing downwards at a sharp angle. Within and about the orifice and on the colored 'fish-tail' there is a sweet secretion very attractive to insects. A line of this honey has sometimes been found to ex-

DARLINGTONIA CALIFORNICA.

DARLINGTON'S PITCHER PLANT.

NATURAL ORDER, SARRACENIACEÆ.

DARLINGTONIA CALIFORNICA, TORREY.—Calyx without bracts, of 5 imbricated, narrowly oblong sepals, persistent. Petals 5, ovate-oblong, erect, with a small ovate tip answering to the blade, and a larger oblong lower portion answering to the claw. Stamens 12 to 15 in a single row; filaments subulate; anthers oblong, of two unequal cells, turned edgewise by a twisting of the filament, so that the smaller cells face the ovary. Ovary somewhat top-shaped, the broad summit being truncate or concave and abruptly dilated, higher than the stamens, 5-celled; the cells opposite the petals; style short, 5-lobed; the lobes short-linear or club-shaped, recurving; stigmas thickish, introsely terminal. Capsule loculicidally 5-valved. Seeds very numerous, obovate-clavate, thickly beset with soft slender projections. A single species. (Brewer and Watson's *Botany of California.*)

This is probably one of the most wonderful productions of the hand of nature. Not only is the structure of the plant in a measure unique, but its whole behavior seems a contradiction to general experience. Flowers, as a rule, may be said to be in love with insects. In many cases they are at least fast friends,—and many of the processes necessary to the very existence of plants, are made dependent on insect agency. But in *Darlingtonia* we have a case where the whole course of its life is spent in collecting and destroying these creatures. It is not, indeed, known whether the flower derives any assistance from insects in the pollination of its flowers. The insects, however, if they could have thoughts might congratulate themselves on the fact, that their enemy has not been able to make its way very widely through the world. It is believed that the object of the plant in entrapping insects, is that they may serve as food,—but as there is abundance of food such as plants normally require, the use in the great economy of nature of insect-devouring plants, is not apparent. Such seeming contradictions in nature are not uncommon. As Percival makes one of his characters say in "Prometheus"—

Rapture is not the aim of man; in flowers
The serpent hides his venom, and the sting
Of the dread insect lurks in fairest bowers;
We were not made to wander on the wing,
But if we would be happy, we must bring
Our buoyed hearts to a plain and simple school;
We may, as the wild vines their tendrils fling,
And waste their barren life, o'erleap all rule,
And grasp all light, till age our fruitless ardor cool.

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INTENTIONAL SECOND EXPOSURE

tend along the wing from the orifice down to the ground. The base of the pitcher contains a clear secreted liquid. This whole contrivance constitutes one of the most curious natural fly-traps known. An insect roaming over the outside soon finds the wing like a fence to guide him to the orifice, and a line of honey enticing him that way. The blade at the opposite side is mottled and gayly colored to catch the eye and fancy of the flying insect. The lobes are so twisted that he may alight on the outside, and by traveling along the blade finds himself within. It is a broad and open road at first, curving and narrowing as the two lobes converge, and leading directly into the orifice. Moreover, the sharp bristles in the path all pointing one way make that the natural direction to travel, and the honey sweetens the path where the dangerous opening yawns above the narrowed way. The 'honey pastures' just within the orifice now tempt him, and are next visited. When satiated and he would leave, the translucent areolæ above, like numerous lighted windows in the roof, entice him away from the darker door in the floor by which he entered. The captive sees no way of escape, and from the shape of the pitcher and the needle-like hairs pointing ever downwards, his destruction is sure. By this elaborate contrivance he was first attracted to the plant, then enticed within, then imprisoned and ultimately consigned to the lake in the bottom of the pit. From the experiments of Dr. Hooker, and from some interesting homologies, it is not difficult to believe that this liquid digests the insect for the nourishment of the plant. The fragmentary remains of dead insects in great variety are always found in the mature healthy leaves, often filling the tubes to the height of several inches, and tainting the air with their decay. From the observations of the entomologist Edwards, it seems that more species of flies are caught than of other insects. But bees, hornets, butterflies, dragon-flies, beetles, grasshoppers, etc., and even snails, are entrapped. For fuller details of the behavior of this 'insectivorous plant,' see Proc. Am. Assoc. 1874, B, 64, and Proc. Calif. Acad. 1875. The secretion upon the edge of the wing was detected by Mrs. R. M. Austin, of Butterfly Valley.

The plant is gregarious, and the hoods and blades are strikingly conspicuous when seen in the bright sunshine of their places of growth, strongly suggesting the unromantic name Calf's Head, by which the local mountaineers know it."

After reading this pathetic account of the manner in which insects are lured to destruction by the beautiful blossoms of an innocent-looking flower, we feel that they may join Whittier in exclaiming:

> Our witches are no longer old
> And wrinkled beldames, Satan-sold,
> But young and gay and laughing creatures,
> With the heart's sunshine on their features;
> Their sorcery—the light which dances
> When the raised lid unveils its glances,
> And the low-breathed and gentle tone,
> Faintly responding unto ours,
> Soft, dream-like as a fairy's moan,
> Above its nightly closing flowers.

Although it has been assumed, and with strong reason, that the plant catches insects, with the direct object of using them as food, they are not essential to the well-being of the plant. The carnivorous habits resulting in the enticing arrangements that seem to have no other purpose than baits to the trap, are more evidences of a luxurious taste, than the result of dire necessity, for the plant is fully able to live to perfection by the aid of its roots alone, as other plants do. In the earlier stages of its history it was thought incapable of cultivation, confirming, as it was supposed, the absolute necessity of insect food to its existence. As noted in the extract from the "Botany of California," it was first gathered by Mr. W. D. Brackenridge. This gentleman was the botanist of the expedition. He had been led by his enthusiasm as a plant gatherer, further away from his party than was prudent, when he suddenly came on a body of Indians with hostile indications. He thought it wise to run with all possible speed to safer quarters. During his flight he caught sight of the plant, and delayed long enough to snatch a handful. It was from these fragments, literally caught on the wing, that Dr. Torrey was able to diagnose a new genus, and to satisfactorily describe the plant. These interesting facts, in connection with its history, were communicated to the author of this paper by Mr. Brackenridge himself.

EXPLANATION OF THE PLATE.—1. Plant of average size. 2. Unopened flower, called "Calf's-head" by the people. 3. Flower the second day. 4. Flower the fourth day.

WILD FLOWERS AND NATURE.

WINTER MUSIC OF THE WOODS.

Alas! how changed from the fair scene,
When birds sang out their mellow lay,
And winds were soft, and woods were green,
And the song ceased not with the day!

But still wild music is abroad,
Pale, desert woods! within your crowd;
And gathering winds, in hoarse accord,
Amid the vocal reeds pipe loud.

—LONGFELLOW.

NELUMBIUM LUTEUM.—Mr. Ernest Walker, New Albany, Ind., notes:

"Two years ago this plant held almost complete possession of a long willow-fringed pond of about five acres in extent in the southern outskirts of Louisville, Ky. The great leaves, many of them over two feet in diameter, quite hid the water out of which they grew. In August, when studded with the great golden buds, the pond was a sight worth a journey to see.

"Early in September of the present year the writer revisited the place. But the pond had been drained, and there was scarcely a vestige to tell of its former glory.

"To the northward of Jeffersonville, Ind., a few miles from the Louisville location in one of the ponds known as the 'Brick-yard ponds'—the remnants of a small natural lake which originally occupied the spot—there is about a half acre covered with the plant. As this pond is in the suburbs of the city it will not be long before the Nelumbo will have disappeared here also."

It is but fair to our correspondent to say that we have changed his heading *Nelumbo lutea* to *Nelumbium luteum*, because under this name the plant is known through botanical, horticultural and polite literature all over the world, and has been for nearly a century; and though it might be truly shown that Linnæus ought to have "established nomenclature on some other than a personal basis," as Prof. Conway McMillan would say, when he rejected Adamson's name of *Nelumbo*, or Morison's still earlier name of *Umbilicus*, the naked fact remains that we cannot now weed the name of *Nelumbium*. out of the literature of the world. There are grave apostles of the church of latter-day scientists who feel equal to the task. MEEHANS' MONTHLY hesitates to join them, while honoring the motive which prompts the hopeless effort.

WINTER PLEASURES FOR LOVERS OF WILD FLOWERS.—In the chapter on the fern *Aspidium thelypteris*, note was made of the abundance of interest winter afforded to lovers of wild flowers. The following note from a Philadelphia subscriber, Mr. C. F. Saunders, happily illustrates this point:

"There is, I think, a special charm about the woods and meadows of the waning year. People who grow melancholy at the sight of the falling leaves, should stir around among them more, and if they look closely, may find much to put them in better spirits. The bright leaves of the *Hepatica* shine out cheerfully from amid the brown ones that carpet the ground, and intend staying till spring. *Aplectrum hiemale* has put up its parchment-like winter leaf, and *Goodyeara* nestles in round, pretty bunches close to its mother-earth. *Arbutus* is in bud, mosses are greening, and the catkins of the alder are hanging stiffly from the branches, ready to soften and open under the March sun that will surely be shining by-and-by. On rich banks, a stick poked about in the loose mould, will likely as not disclose the roots of the wild ginger, with next year's flower bud set on, clasped in the little sheath; and in marshy spots the spears of the skunk-cabbage plants have already appeared above the ground. These harbingers of spring—a few out of many that any one may notice in an afternoon's walk in the late autumn—show that nature does not wait until winter is passed before beginning her spring work. Like a 'forehanded' workman, she already has her vernal flowers under way, and the knowledge of it ought to make the thought of winter a little easier for us to bear."

THE GRAPE APPLE-GALL.—Every now and then a paragraph appears in the secular papers, about a grape vine which has wonderfully produced hickory nuts! The supposed fact has even been used to prove that pollen has an immediate influence in modifying the character of a fruit! If any one would only take the trouble to cut one across, he would see into the little channels the insects have made for themselves. The gall is formed by a small fly of the genus *Cecidomyia*. It is a remarkable

GRAPE APPLE-GALL.

fact that each species of the gall-fly family has its own form of the gall. In some way this results from the varying power which obstructs the growth energy. A large rock falling into a stream turns a larger and differently formed current than a smaller one. The acid deposited by one insect is more or less obstructive to the formative energy than the acid of another. This is only the general principle. No one, so far as the writer knows, has worked the matter out in detail.

DESERT FLOWERS.—Animal life is by no means scarce in deserts where rain seldom falls—the creatures which exist there feeding on the juicy, succulent plants which usually abound in those locations. Species of turtle are not uncommon. They mine into the earth under large cactuses, and in that way are enabled to reach the centre of the plant, which may be protected on the outside by numerous spines; in fact, the different species of cactuses afford the chief means of obtaining liquid. A writer has stated that he has seen horses crushing open thorny cactuses by their hoof-protected feet so as to get at the juicy interior. Many kinds of cactuses are so illy protected by spines that herds of sheep can be maintained in some of these arid regions. As a matter of agriculture, cactuses are often flayed by fire so as to destroy the small spines before cattle feed on them. Travelers across the desert especially use cactuses in this way for their horses. The fruit also is eaten by man—the small spines being destroyed in much the same way. Most cactus fruit has much the flavor of gooseberries. In some parts of Mexico thousands of goats are maintained entirely on some varieties of Opuntia. We are apt to look upon cactuses in cultivation as objects of curiosity merely; but in the countries where they grow wild they are properly among the benefactors of man.

HONEY AND WAX.—Bees not only convert the nectar of flowers into honey, but also manufacture wax from it. A correspondent of the U. S. Department of Agriculture states that it takes 24½ pounds of food to produce one pound of wax.

Experimenting with the *Melilotus alba*, he found that its chief period of bloom was from July 20th to September 1st. The bees were continually busy among these flowers, and yet, from the 24th of July to the 10th of August, there appeared to be no increase in the weight of honey in the hive. Although much has been written about the habits and the work of the honey bee, it is evident that very much more has yet to be learned.

MALE ORCHID FLOWERS.—The stamens and pistils of an orchid are so completely united, that only those familiar with the structure of an orchid flower can appreciate the fact of the union, or, indeed, to easily point out which ought to be considered as part of the stamens and which the pistils. It is not, therefore, remarkable that until recently the fact has been overlooked that there are separate sexes among orchids, as among other classes of plants, occasionally. Cases of orchids being entirely barren or destitute of a pistil structure, are not now uncommon.

CULTIVATION OF THE CALIFORNIA PITCHER PLANT.—In relation to the California pitcher plant, it may be noted in regard to its cultivation that in 1872 Mr. James Taplin, of South Amboy, N. J., succeeded in growing them to great perfection in pots of sandy peat soil,—the pots set along side of a stream, an interesting account of which he gave in the London *Garden*, vol. 1, page 396. Since then it has been cultivated to such great perfection in the Old World that plants in a Dublin garden gave leaves larger than any recorded in a wild condition, namely fully three feet.

STERCULIA PLATANIFOLIA.—Mr. John Kinnier calls attention to this beautiful tree as growing finely in the vicinity of Lynchburg, Va. The leaves, in outline, are very much like the common plane tree, whence it is named *platanifolia*. But it belongs to a very different family of plants—*Sterculiaceæ*. Its fruit is particularly singular. When a pea-pod bursts the peas may be noted adhering to the edges of the pod,—the sterculia, however, bears its seeds on the outside of the edges, with the appearance of a pea-pod split open on the back, with the seeds arranged on either side of the valves. There are few more remarkable and interesting methods of seed bearing in the vegetable kingdom.

ABSORPTION OF MOISTURE FROM THE SOIL BY PLANTS. The manner in which the roots of plants absorb moisture from the soil does not seem to have been clearly established. For instance, an oak tree, which by an estimate, may have seven hundred thousand leaves, is said by chemical biologists to give off into the atmosphere seven hundred tons of water during the five months it carries its foliage,—yet an examination of the soil about the roots of the tree would result in finding nothing that we could reasonably call water,—indeed, underneath all large trees the earth at any time during the growing season will be found comparatively dry, and even if we could comprehend that the soil contained water in the literal sense, it would be hard to imagine that the amount of the said water ever reached seven hundred tons during the period named. To illustrate the point still further one may recall some immense building, the sides of which are covered with the leaves of the Japan ivy—*Ampelopsis Veitchii*, —the leaves, in number, probably far exceed those on the largest oak,—and yet with a stem at the ground not thicker than one's finger. If we cut the stem at that point no water seems to ooze out, and yet one would suppose that in order to evaporate seven hundred tons of water in five months it would be necessary for a comparatively strong stream to be continually flowing through the long stem. It is well known that not only the leaves of plants, but also the roots, must have atmospheric air around them in order to properly perform their functions. Water as water is not so essential for that excess as the humidity of the atmosphere. Can it be possible that the plant by the aid of its vital power can transform the gaseous elements into liquids?

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INTENTIONAL SECOND EXPOSURE

DISEASE IN THE LOMBARDY POPLAR.—Few trees have been so persistently cleared away by disease, in America, as the Lombardy poplar. It is extremely rare to find any in Eastern Pennsylvania that have not been nearly destroyed, out of the many thousands that have been planted at various times. It does not seem to attack the tree in its younger years, but after it has grown to some twenty or thirty feet in height the trouble begins, until the tree gradually becomes a little more than a huge stump.

THE USEFULNESS OF THE ENGLISH SPARROW.—Some people contend that there is a very useful place for satan, even in the worst constructed theological system, and this must be said of the English sparrow when we are considering the usefulness of the feathery tribe. While it attacks grain and many fruit crops, it finds all kinds of smooth caterpillars a very toothsome dish. Wherever sparrows abound, this class of troublesome insects is very well kept down. Unfortunately the hairy caterpillars are as carefully avoided, and only the smooth ones are destroyed. On the whole there would seem little gained, from this point of view, in the introduction of the English sparrow.

VITALITY OF SEEDS.—Mr. Tillinghast inquires:—"How do the seeds of hardwood trees,—acorns for instance, get onto the ground, and generate after soft wood trees have been cut and removed from the ground? Are the seeds of the hardwood trees there before the softwood trees are removed, or are they brought there afterward by some agency? There seems to be an idea in some minds that the new growth is a result of 'spontaneous generation.' By showing how the seeds get to the place in which they germinate the fallacy of the spontaneous generation argument will be shown."

In a deep shady pine or similar wood, seeds are brought by birds or other animals, or the wind,—and when they reach the ground sprout and grow at once. But the conditions are so unfavorable, that they make but a few leaves each year, and when a dozen years or more old, would be but a few inches high. The writer took a disbeliever in this to a red cedar wood once upon a time, and satisfied him by ocular demonstration, that these things were so. That piece of woods was eventually cut away, and then the "hardwood" had a chance to grow. It is a "hardwood" forest now,—the tulip tree chiefly prevailing.

This is not saying that seeds will not live in the earth, if deep enough to exclude air, for an indefinite time. The evidence that they will is too strong to be doubted. But this will not help the point suggested by Mr. T., as seeds would have to be near the air or could not sprout. In brief the change occurs because young plants are already there.

UNUSUAL VIGOROUS GROWTHS. — In your MONTHLY for November, 1893, page 171, you make mention of some large leaves of *Magnolia acuminata*. While collecting, the past summer, I noticed some large leaves of sycamore (*Platanus occidentalis*) and hard maple (*Acer saccharinum*) on young shoots of the season's growth. I brought them in to preserve, and made measurements which were as follows: One of the sycamore leaves measured in extreme breadth 16⅜ inches and extreme length (excluding petiole of 2 inches) 11⅛ inches. Another 16¼ x 11 inches, directions respectively. By calculations made by triangles it was found that the larger one would cover 116 square inches, approximately.

The hard maple leaf, from the same place (an old cemetery where some of the dates on the tombstones are 1812), measured from attachment of the petiole to point of right lobe 7⅜ inches, to point of middle lobe 7½ inches, to point of left lobe 7¼ inches; petiole 5½ inches in length; extreme breadth 10⅛ inches. By triangle it was found to cover 40.5 square inches of surface.

I recently measured the season's growth of a cane of rose bush of the Baltimore Belle variety that is 18 feet long. Other canes on the same plant have been allowed to grow at will. The plant stands on the north side of a building where the soil has been moist all summer. On November 2nd, my attention was attracted to some beautiful white flowers growing by the roadside. On investigation they proved to be the Canada violet (*Viola Canadensis*). The divaricate branches formed a circle, the largest diameter of which was 42 inches, and the smallest 36 inches. The plant was taken up and planted in the flower garden.

Orwell, Ohio. ERNEST E. BOGUE.

GENERAL GARDENING.

THE GARDENS OF MT. LEBANON.

Fair gardens, shining streams, with ranks
Of golden melons on their banks,
More golden where the sunlight falls;
Gay lizards, glittering on the walls
Of ruin'd shrines, busy and bright
As they were all alive with light;
And, yet more splendid, numerous flocks
Of pigeons, sitting on the rocks,
With their rich restless wings, that gleam
Variously in the crimson beam
Of the warm west, as if inlaid
With brilliants from the mine, or made
Of tearless rainbows, such as span
The unclouded skies of Peristan!
And then, the mingling sounds that come,
Of shepherds' ancient reed, with hum
Of the wild bees of Palestine.

—THOMAS MOORE.

AZALEA AMŒNA. — In gardens, there is a lovely form of hardy azalea, which has the calyx turned into a corolla, so that the flowers appear like two tea-cups or two saucers, the one set within the other. It is one of the handsomest early flowering ornaments of American gardens. It is stated that the original species, and to which this form belongs, is really *Azalea Indica*, although it has been considered by some botanists sufficiently distinct from this well-known class of green-house plants, to have a specific name, and hence it is sometimes figured in catalogues as *Azalea obtusa*, and, occasionally, *Azalea calyciflora*.

SICKLY HOUSE PLANTS.—How difficult it is to advise by letter, a recent instance illustrates. A Philadelphia lady applied to MEEHANS' MONTHLY for advice about a *Cypripedium insigne*, the leaves of which were turning yellow. From the description, "too much water" was the decided answer. An opportunity occurred for a call on the inquirer, when it was found that the large plant had been in a six-inch pot for several years, so matted with roots that no amount of watering would injure it. It was yellow simply from starvation. It would not do to re-pot at this season of flowering; but very fine rich manure, reduced to powder, and sprinkled on the surface in among the leaves, would be the best advice.

DRAINAGE IN FLOWER-POTS.—Although all persons are familiar with the fact that the flower-pot must have a hole in the bottom, very few understand why it is necessary that the water should be allowed to escape. The usual thought is that water is essential to plant life. To some extent no plant could live in thoroughly dry earth,—at the same time atmospheric air is of quite as much, if not of more, importance than water, and the change of air is as necessary for the roots of plants as for human beings. Air in the earth in a flower-pot, soon loses its life-giving powers, and has to be changed for fresh air. Watering accomplishes this,—it drives out all the foul air, and then after the water passes away, a new supply of air takes the place of the water. In this way continual watering thoroughly aerates the soil. A plant, in a flower-pot, which seldom needs watering, is in a bad condition.

CARE OF FOREST TREES.—A large number of fine trees meet with an early death, on account of rotting in the center. This rotting is brought about in all cases, by stumps of broken branches. When these rot, the decay soon permeates the whole trunk. No stump should ever be left on a tree, whether the branch be cut off with a saw or broken off by the wind. It should be taken away clean to the trunk, and the scar painted over so as prevent decay, until the wound is wholly covered by the new growth of wood and bark. When trees commence to fail, many persons imagine it is owing to some trouble at the roots, and if the tree is much valued, the earth around the roots may be dug up and disturbed. It is a good practice to apply fertilizing material, even to an old tree, as an abundance of food helps it to sustain its vigor; but all this is of no avail as long as dead stumps are left to decay the center of the tree. It is chiefly on this account that so much injury results from cutting back large branches. In a large number of cases the stump dies, with the results already enumerated.

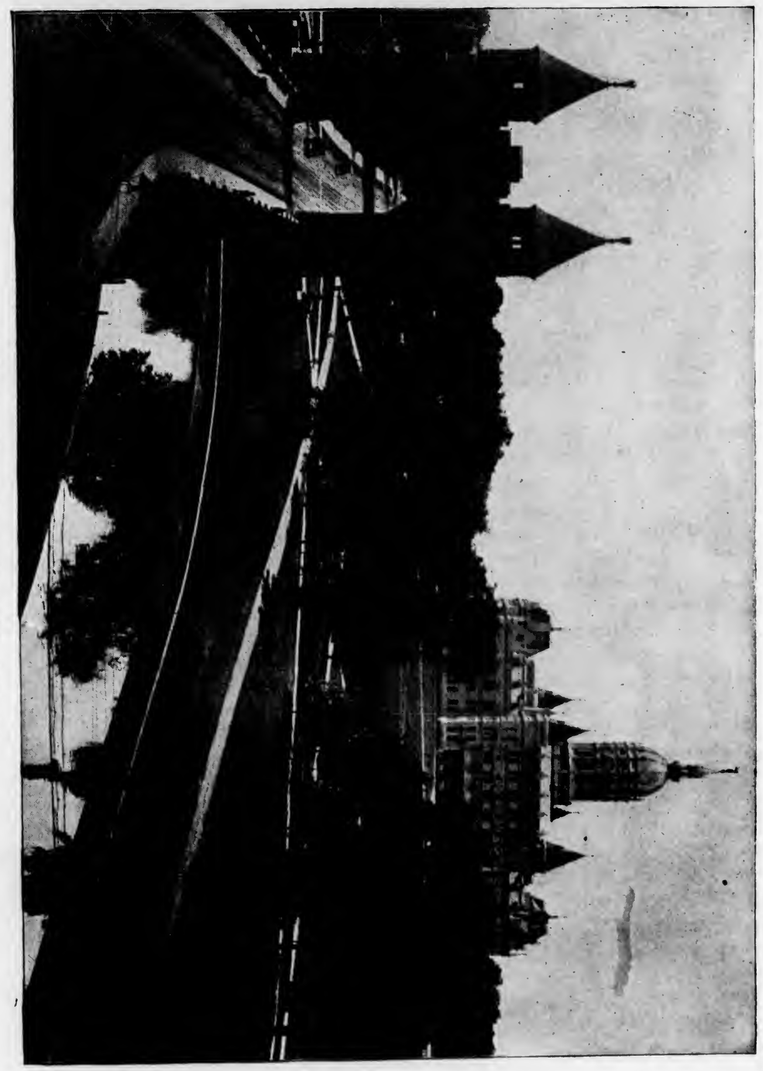
MULCHING.—It is a good plan to mulch small plants in borders, or even larger trees and shrubs on the lawn, that have been recently transplanted, with well rotted stable manure, leaves or other litter. This will prevent the continuous freezing and thawing, which would otherwise "heave out" small plants that have not as yet secured a good root-hold. In the case of larger plants, it lessens the opportunity of the frost to sink as deeply about the roots as would be the case if the mulch were not put on. Care should be taken to do this while the ground is frozen, as mice are less likely to make a harbor of it at that time.

CLIMBING VINES ON TREES.—A young man once offered his services to a daily paper with which the writer of this paragraph was connected, giving, as his great qualification, that he "could write the most learned articles on subjects of which he was totally ignorant." The horticultural literature of the day is full of this class, and they are sure to rail at intelligence,—never tiring of praise of the "practical man." One of this class has an article in a leading serial on climbing vines over trees. We are to set our plants "in rich soil" near the trunk, tack the branches with a nail and shred to the trunk, and wait for the floral glory. It will be a long wait. To get a vine to grow up a large living tree, get a plant several feet long. Plant it six or eight feet from the tree trunk, or so far that by burying the branch of the vine under ground the top of the vine can be bent up at the tree trunk, so as to be just above the surface of the earth. The earth is too dry and poor near a huge tree trunk for a vine to grow. This paragraph will make food for the "practical writers" for some years to come.

SICKLY PALMS.—Mrs. R. M., New York, has "An *Areca lutescens*, a keepsake from a friend, placed with a florist for care during a trip to Europe, and which has been returned yellow and sickly, and covered with black scales. What is best to do for it? I have cleaned the scales several times, but they come again." The scales are mostly dead, covering by their dead bodies numerous eggs beneath. These eggs are very small, and enough are missed at the cleaning, to produce a new brood. Several cleanings are usually necessary before they are wholly exterminated. Washing with whale-oil soap is the best for palms or any other hard-foliaged plant. Palms are often sickly from the water not draining away rapidly in the pot or tub. This must be remedied by turning the pot upside down, so that the ball falls out of the pot, and enough earth taken off the bottom to admit of broken pots, bricks, or stones to be filled in the place. Then place the ball back into the pot again. After this, not much water should be given, till new fronds appear. Hard-leaved plants do not usually need much water, except in the growing season. It would help to put the palm in a hot, sunny place in summer.

LAWN AND GARDEN PLANS.—When a new piece of land is to be plotted, it is often the practice to get the architect who draws the plan for the dwelling and outbuildings, also to make a plan of the grounds; but these plans are generally deceptive. That which may look pretty from a bird's-eye-view on paper, has a very different appearance on the ground. A beautifully planned picture may be anything but pretty when it comes to be worked out. The regular landscape gardener well understands this, and though his picture may not have the beautiful lines and curves which the architect's plan has, it will often be found to bring more pleasurable and practicable results.

Convenience must always claim superior attention, and after convenience has been well studied, then ornamentation comes in. The paths and roads are, of course, a great element in convenience. In many parts of the Union, where the winters are long and severe, paths for pedestrians should be bricked, flagged or be formed of some kind of lithogen, it being essential to convenience in the winter time or wet weather, or board-walks where the other material is not easily obtained. For driveways nothing has yet been found superior to macadam. In the material for surfacing macadam roads, tough stones are superior to a stone which is hard or brittle. A brittle stone soon grinds to mud; but much depends on the manner of laying the stone,—the looser the surface, the more easily the stones grind. If the surface stones are comparatively small, and can be well pressed together, so as to make a smooth surface, there is no grinding, and consequently little wear.



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INTENTIONAL SECOND EXPOSURE

PRUNING DECIDUOUS HEDGES. — The last trimming of hedges should have been done early in the fall, before the wood hardened; but many people find it necessary to leave it until winter, on account of pressure of other work.

A properly trimmed hedge is one that is broad at the base and narrow at the top. One that is pruned flat on the sides — like a wall — will in time lose the lower branches. The general tendency of growth is always toward the top of the plant, and unless that part is pruned heavily it draws the vitality from the lower branches which soon grow weak and finally die.

Hedges that have grown too large, or are devoid of lower limbs can only be brought into proper shape or size by cutting them down to within a few inches of the ground. Strong and vigorous shoots will then push up, which can quickly be trimmed into a new hedge of the desired size.

The early training of the hedge has much to do with its beauty in the future. The plants should be cut down within a few inches of the ground, for two or three succeeding years after setting out, if but a small, bushy hedge is desired; but if it is the intention to grow a large hedge, then the plants should not be cut down until about two or three years after planting, so that strong, vigorous shoots will push up.

Hedges that were set out last spring or the past fall, would be greatly benefitted by a mulch of well rotted manure, for the winter. This can be worked in the soil in the spring, enriching it, and inducing a strong, healthy growth.

SEQUOIA GIGANTEA IN THE EAST.—R. W. M., Chester, Pa., asks:

"Will the *Sequoia gigantea*, or, as it is sometimes called, the *Wellingtonia* or *Washingtonia*, succeed in this section?"

The *Sequoia gigantea* will grow in Pennsylvania; but it succeeds only in exceptional instances, owing to the attacks of fungus disease which destroys the branches in the summer time. The trees do not die off the first year, but the lower limbs keep going off, until finally the whole tree is destroyed.

There is a specimen growing in Germantown, on the grounds of the late William Norton Johnson, which is probably twenty-five feet high. The fungus does not seem to have made as great strides on this tree as it has on some in the Meehan nurseries here. The tree seems to be doing very well, though somewhat troubled by the fungus.

The attacks of this fungus can be checked, if not wholly prevented, by spraying the tree about half a dozen times through the growing season. The solution used is what is known as the Bordeaux mixture, consisting of blue copperas, ammonia, lime and water. The solution can be purchased from any of the seedsmen who advertise in MEEHANS' MONTHLY.

PRUNING YOUNG HEDGES. — Mrs. J. H. B., Chester Co., Pa., writes:

"Last autumn I planted out a number of privet plants in a hedge. They have grown to be about eighteen inches or two feet high, and I write to ask if it is the right time to cut them down now, and to what distance from the ground this should be done? Will you also kindly tell me whether I could this month transplant a large white pine tree, or if I must wait until March?"

Whether or not you ought to cut back the privet hedge, depends upon how large you will want the hedge to grow, If it is to be a low, dwarf hedge, you can cut it back now, and trim again into shape after they grow,—say next June or July; but if you want a strong hedge, to reach several feet high, you must not prune the plants for two or three years. Without knowing exactly these requirements, it would seem that there was no great necessity for cutting now; but the proper time would be early in the summer. In trimming, take care to keep the lower branches always wider than those towards the top, otherwise the hedge will get thin at the base.

In relation to transplanting the white pine, this also depends on circumstances. If the tree is very heavy, stands by itself, and you can dig it up with all the roots, that is to say, by commencing to dig at some distance from the tree, so as not to have the main roots nothing much but stumps, it might do to transplant now; but on the whole it would probably be best to defer the matter until the spring comes. The proper time in spring will be as soon as possible after all the frost is out of the ground.

DEUTZIA SCABRA--UNPRUNED

PRUNING OF FLOWERING SHRUBS.—It is at this season that much of the pruning of flowering shrubs is performed, and usually the operation takes with it all the flower buds that should clothe the plant with a mass of bloom during the spring and early summer. This is because gardeners do not consider the flowering habits of the various shrubs with which they have to deal. To prune away, in winter, the young wood from a weigela, deutzia, mock orange, lilac, or bush honeysuckle, takes with it all the bloom for the following spring. This is usually the case, however, when indiscriminate pruning is practiced. There are very few shrubs that may be severely cut in winter. The hardy hydrangea, althæa, and some smaller shrubs like the hypericum, form their flower buds on the young growth made in the summer of the same year they bloom, but nearly all other shrubs make their flower buds on the young growth made the season previous to their expanding.

The proper system of pruning is one that will induce an abundance of young wood, and this can only be accomplished by the trimming out of all two year old growth,—that which has already flowered,—cutting out the old shoots close to the ground, so that the new growth will push out from the root of the plant. If the bush make too strong and rank a growth, a moderate amount of pruning in winter will not lessen the bloom to any extent, especially as the extreme ends of the young wood do not flower.

Summer pruning of flowering shrubs is practiced by some gardeners with success,—after the plants have done blooming,—but in this case it must be done with great care, as the cutting away of wood when in full leaf, tends to weaken the plant, while the object to be gained is to foster a strong and vigorous growth.

TOP-DRESSING LAWNS.—To make a bright green sward next season, a good top-dressing on the lawn, during the winter, should not be neglected, and the earlier the work is accomplished, the greater will be the result. The continuous mowing during the summer, without giving any stimulant to the soil, soon weakens the grass until it finally dies out. Well rotted manure for the winter is probably the best remedy, though many prefer to use wood-ashes, guano, ground bone or other commercial fertilizers, as being less likely to introduce seeds of noxious weeds.

DEUTZIA SCABRA--PROPERLY PRUNED.

RAISING CUTTINGS IN WATER.—Almost any plants with comparatively hard wood, can be made to root by being placed in bottles of water. The oleander is a familiar illustration, —the ivy also can be easily raised this way. After the roots have become strong in the water, the plants can be taken out and placed in earth. For this, perhaps it is better to let the water continue stagnant in the bottles—a change of water is not beneficial. In these cases, the gases necessary to aid in the life of the plant, are furnished by the decaying materials which cause the water to become stagnant. Even soft-wood cuttings will root readily in sand with water. A saucer of sand, for instance, filled with water, is all that is needed to root many soft-wood cuttings. These saucers with the cuttings should be kept shaded for a day or two, and then placed in the full light. If placed at once in the full light they are liable to wilt.

FERTILIZING LARGE TREES. — W. H. J., Rosemont, Pa., writes:

"I have a chestnut tree, said to be over two hundred years old. The trunk is over ten feet in circumference. I have been advised to dig around the roots and manure the same. Would you advise me to do that, or manure on top of the ground?"

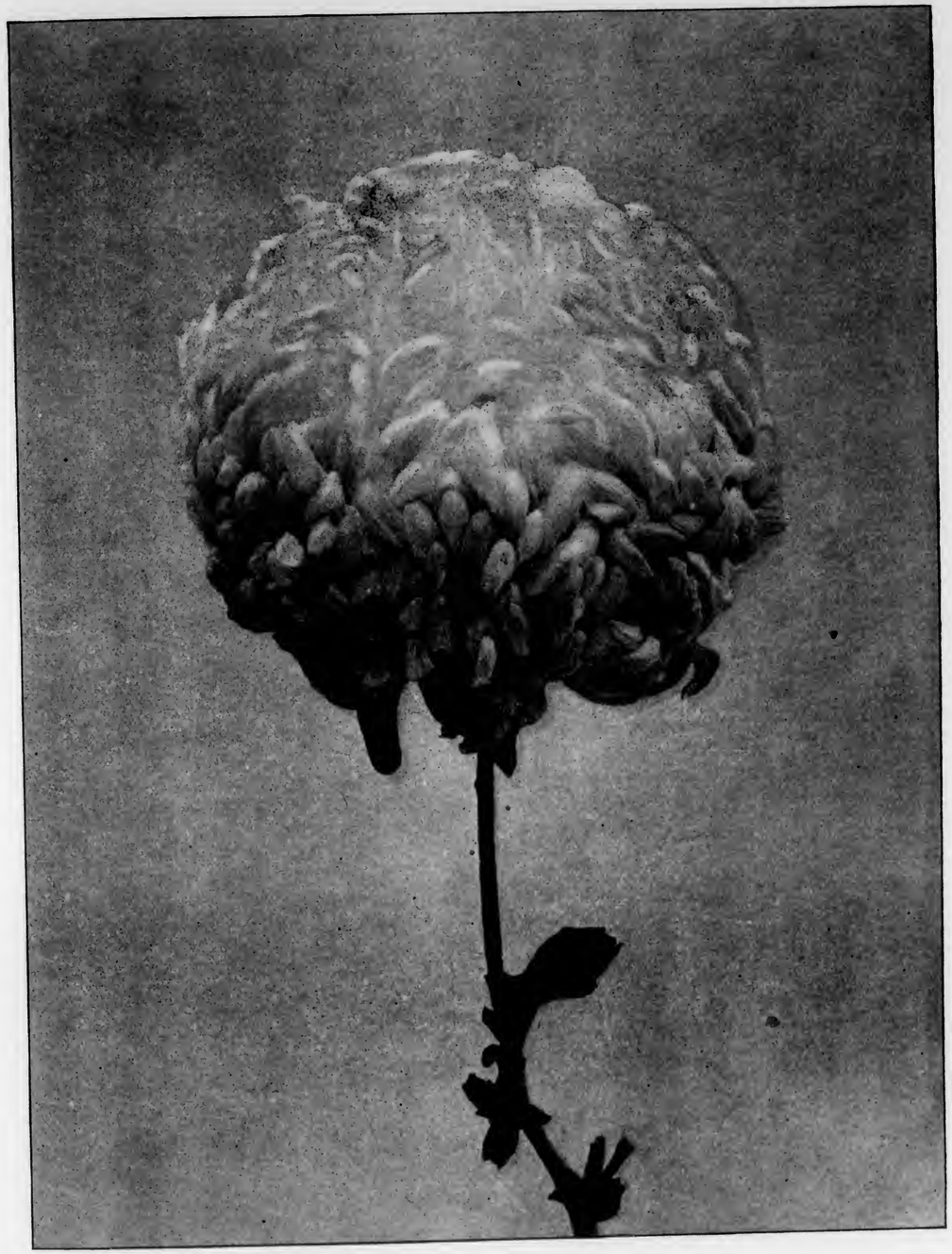
It may not be necessary to manure the chestnut tree, unless it does not seem to be doing well. You can easily tell this by noting whether the growth made this last summer was strong and vigorous, or light and weakly looking. If the latter be the case, then a good mulching will be of great benefit to the tree.

Manure should be spread thickly over the surface of the ground, covering the area that you think is occupied by the roots, and this should be worked into the soil with a garden fork, working it into the ground to the depth of about one foot. This may disturb some of the small fibrous roots; but that will not injure the tree as long as you do not cut the heavy main roots. Well-rotted stable manure is what should be used for the purpose.

BUDDING.—A very interesting occupation, for the lover of gardening, is the process known as "budding." This is simply taking a bud on a shield of bark, cutting from just above to below the bud, and inserting it under the bark of another plant. Budding can be performed, of course, on different plants of the same species. One may desire to have the branch push out from an open place on a trunk or branch in order to fill the space, and this can be done by inserting a bud from the same tree in the place where we want the branch to push out. This is often resorted to where trees are trained to some particular form. A variety of fruit or plant, not particularly desirable, can be changed to that which is preferred, by budding. The particular time to bud can hardly be given in a paragraph of this kind, because the same tree will be fit to bud in one locality, when it will be fit only at some later or earlier time in another,—it depends upon the health and vigor of the plant to be operated on, and can only be told by experiment. The experiment is performed by raising the bark with a thin-bladed knife—for convenience a cut shaped like a "T" on the bark is the best. The bark will either adhere or can easily be lifted. The operation can only be performed when the bark lifts freely, but even this may be done too early. If the bark and wood appear to be watery it is usually too early,—the appearance should be rather dry than otherwise in order to strike a successful time. The shield, with the bud from the desirable plant, is then slipped underneath the bark and tied down lightly, so as to be secure against evaporation. No amount of written illustration will make a good operator, but a few attempts to actually do the work will soon teach a learner to succeed.

NEW OR RARE PLANTS.

SHEPHERDIA.—In the northern portions of the Rocky Mountains, even as far north as Denver, the traveler often comes across a dwarf shrub loaded with oval scarlet berries which are fairly toothsome, especially if one is hungry —*Shepherdia Canadensis*. It is said some fruit growers intend to introduce it to cultivation for its fruit. Unfortunately the plants are separately sterile and fruitful, so that no one would be certain from seed, that he had a fruitful plant. Some years ago its beautiful relative, *Shepherdia argentea*, was grown in gardens for its berries, — but this trouble with separate sexes, led to its disappearance from choice collections.



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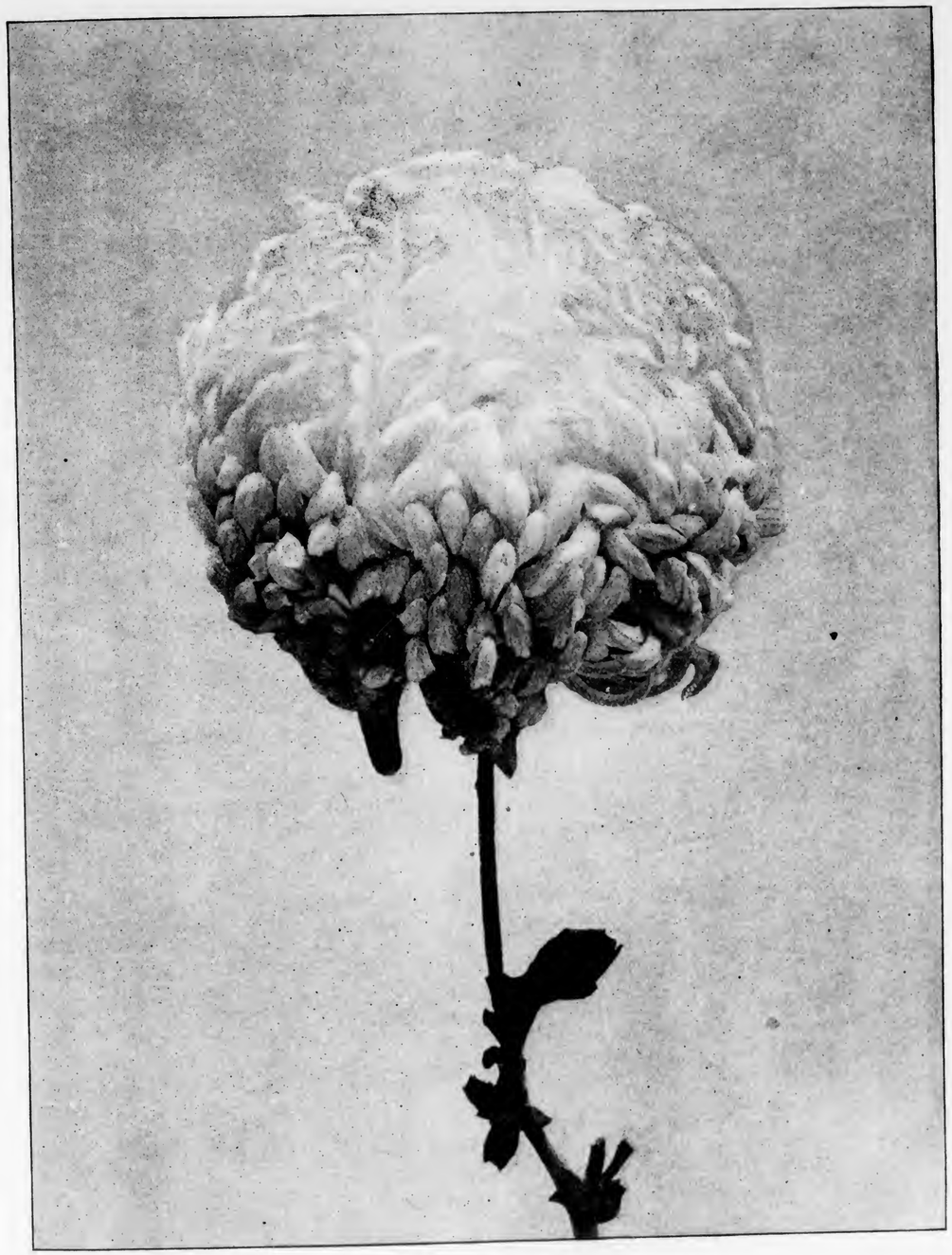

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INTENTIONAL SECOND EXPOSURE

CARYOPTERIS MASTACANTHUS.—For the past five years this dwarf shrub has been under trial in the Meehans' nurseries, and found to be one of the most desirable of late summer and autumn flowering shrubs. It is closely allied to an old inhabitant of our gardens,—the chaste bush,—*Vitex Agnus castus*, and belongs to the same natural order, *Verbenaceæ*. The flowers are of a much darker blue than the Chaste bush, and the plants make a greater show. It is a native of Northern China, and though the extreme twigs may be injured in high northern regions, it is not injured sufficiently to prevent a good show of bloom the succeeding summer. Though in no way whatever resembling or related to the spiræa family, it is being circulated as "Blue Spiræa." See page 5.

IMPROVED CHRYSANTHEMUMS.—MRS. H. H. BATTLES.—It is fifty years since the chrysanthemum was taken in hand for improvement, by Europeans. One, Webber, in the Island of Jersey, sent out some remarkable novelties at that time, among which "Webber's Queen" was prominent. After Fortune introduced some new races from China, another advance followed, — an English florist, named Salter, settled at Versailles, in France, taking the lead. In recent years, America has taken a leading hand,—and Philadelphia especially is the home of many new and popular seedlings. A remarkable one is Mrs. H. H. Battles, on page 13, (figured ⅓ size,) to show its enormous proportions. It is white, relieved, however, by a tinge of blush on the lowermost petals. An interesting peculiarity, and by which it may be readily distinguished when any doubt of its identity exists, is a small tuft in the centre, which Shakespeare would perhaps call "the button on the top of fortune's cap." It has proved a good fortune to the raiser, Wm. K. Harris, of Philadelphia, not only for its size and beauty, but from its flowering somewhat later than some others, thus prolonging the chrysanthemum season.

VIBURNUM ODORATISSIMUM. — This is a Chinese species with singularly sweet flowers, which so very few viburnums possess. It is a native of China, and should be perfectly hardy in the northern part of the Union, except, perhaps, the extreme edge. The odor is said to be very similar to that of the sweet olive. By the way, it is an interesting fact that in almost all large families of plants only one or two species are odoriferous. Among the mignonettes, of several dozens of species, only one is fragrant—the same with the violet,—and similar instances could be given among many other families of plants. This fact has often struck thoughtful people when discussing the relation of insects to flowers, of which so much has been made under the name of botanical science by sensational writers during the few past years. Just why one or two species in a large genus should be singled out as favorites for the gift of odor, while the large number of species in the same family should be odorless, cannot be explained by those who talk so glibly about the insect relationship.

THE HARDY FLOWER GARDEN.

FUNKIAS.—There are few more beautiful or more useful plants to the gardener than those known as funkias, or sometimes hemerocalluses. They will grow in the deepest shade, if not very dry, and flower profusely, taking care of themselves from year to year, but will still be thankful for a little fertilizing material being placed around them. They are very well known under the common name of "day lilies,"—a name, however, which some are endeavoring to supplant by another common name—"plantain lily." It is often said to the reproach of botanists that they occasionally change the botanical name, and it is a misfortune when such changes occur; but the changes in common names are with less reason and are found aggravating.

FRINGED GENTIAN—Mr. Frank E. Lord, of Chicago, notes the difficulty which some have experienced in raising or cultivating plants from seed of the fringed gentian. He states that it is being driven from the vicinity of Chicago, through the introduction of city improvements. There ought to be no difficulty in raising it from seed, as we see by the chapter on the fringed gentian, that the old English botanist, Collinson, had no difficulty in raising it. Though it has not been tried on the grounds of the conductors of MEEHANS' MONTHLY, there is little doubt but what if the seeds were sown as soon as ripe, just before the winter sets in, in a place selected for cool shade the seeds would grow well. Many persons fail to raise seeds of garden flowers, through saving them until spring. Nature's time for sowing seeds is when the seeds are ripe. A similar inquiry is made about *Lobelia cardinalis*, and the same remarks apply,—they do not require to be sown in wet places, as much as in partially shaded places, and in the fall of the year.

HARDY SWEET VIOLET.—Mrs. Wilhelmine Seliger, Hartford, Connecticut, places on the conductors' table the last week in November, some of the wild sweet violets of the old world, *Viola odorata* with the following timely note :—

"I mailed to-day a small box containing a few plants of our German native wild violets. In your October issue of MEEHANS' MONTHLY you note that so few species of these little flowers are odorous. This I have often *here* regretted when I found them in quite a number of varieties, all scentless; then from earliest youth at home in Germany I cannot remember of having ever picked violets than those of lovely perfume, of which I send to-day a sample. I brought them in from my garden to-day, where they grow, unprotected by anything, in the open air, not even sheltered against sweeping winds; they are very hardy, the plants, as well as little blossoms, never die during our severest winters here. I know there are better and larger flowers sold here, but doubt their hardiness as compared against these wild ones.

They grow under the thorn hedges in North Germany, and often our dresses have been torn when we searched for them as early as March, and the beginning of April. A few plants originally brought from home have spread here wonderfully as you may see on their thrifty growth. They will continue to bloom all winter in the house and next spring the plants can be set out again in the garden where they will multiply rapidly by runners and also by seed."

It may be useful to add that nothing seems to suit the wild sweet violets so well as partial shade. Any one who has a clump of deciduous shrubbery can have these delightfully sweet flowers to perfection. They would thrive well under an osage orange hedge.

FRUITS AND VEGETABLES.

A LARGE TOMATO.—T. R. Haines, Abbott, Nebraska, claims to be the raiser of the largest tomato—3 pounds, 3½ ounces, and 8½ inches in diameter.

NON-BEARING FRUIT TREES.—Mrs. J. C. B., Harrisburg, Pa., writes: — "I have several large pear trees, planted about five years ago, which have made an enormous growth; but up to this time have not produced any fruit. Can you give me a reason for this, and is there any thing that I can do to force the trees into bearing?"

The trouble with these trees is that all the energy is being excited to making growth, probably on account of the soil being particularly rich, and this prevents the formation of fruit buds. If this energy is checked, buds will form, and fruit produced the following year. In order to do this, you should dig a trench around the trees, about two feet from the trunk, cutting off all roots. If large roots are not found this far from the tree, work in closer to the trunk, until sufficient roots have been pruned. Fill up the trench again, packing the earth in tightly.

PRUNING GRAPE VINES.—That pruning is a great art, seldom mastered by even good gardeners, may readily be noted by the condition of grape vines, in most places. All the lower portions of the main shoots are comparatively naked, and the few stronger branches grow from the upper portion of the vine; but a well pruned vine will be covered with strong branches from the base to the summit. This is really the leading object in grape vine pruning; but not one in a hundred knows how to bring it about. It is wholly accomplished by summer pruning. The upper branches are usually the strongest, and if left run they will draw the nourishment from all the rest. The well instructed grape pruner watches his vines during the season of growth, and whenever any one branch is inclined to grow stronger than its neighbor, it is either pinched back, in order to check its ambition, or else broken off entirely. The social problem of the "rich becoming richer and the poor poorer" applies here. We check the strong branch and the weaker is strengthened thereby.

AN EVER BEARING ORANGE.—It is said that an orange which bears continuously has been raised in Florida, and much comment is made on its possibility for profitable culture. In the more northern part of our country, however, no ever-bearing fruit has been profitable. There are ever-bearing strawberries and ever-bearing raspberries, besides some other ever-bearing things in the gardens of the curious, which have not had a very wide popularity.

RAISING FRUIT CUTTINGS.—There is scarcely anything but what can be raised from cuttings, if one can only get the exact secret of success. Our common maple trees never grow from cuttings, when planted in the open air, as other cuttings are,—yet when florists use branches of maple, for stakes for roses or similar plants, under glass, the maple shoots root like willows. It is just the same with peach and pear trees. In the South the Japan pears are nearly all raised from cuttings,—that is to say the Le Conte, the Kieffer, and the Garber; but in the North they would not grow in this way. Just why this difference should exist no one knows.

PUFF BALLS.—Much attention recently has been given to the question of poisonous mushrooms. A few are injurious; but the larger number are healthful. Still the fact that a few of the mushrooms, when poisonous at all, are extremely dangerous, deters many persons from using anything but the common mushroom so well known. There is one class, however, known as "puff balls," not one of which is poisonous. The larger ones, when cut up in slices and fried as egg-plants, are just as delicious as the common mushroom. They must be taken when entirely fresh, so that the whole of the interior is of a clear white color. In this respect they do not differ from the common mushroom, which are by no means wholesome when stale.

LARGE MUSHROOMS.—In the cultivation of fruits and vegetables there are varieties which produce large variations in their fruits and, indeed, in nature it is the same. Oaks have large acorns and trees of the same species occasionally have very small acorns, and what is true of trees and plants in general, is also true of the lower order of vegetation known as cryptogamic plants. For instance, a whole field may be found producing only small mushrooms,—another near by will have larger ones. Some there will be with dark pink gills, and some with gills comparatively pale, and so on; but there are many other grades of variation. In size especially, the larger varieties are the exception. If any practical horticulturist would possess himself of these facts he could produce mushrooms of such large proportions as would lead him to get the monopoly of the trade. He would, of course, have to guarantee that the spawn he sold would produce the large mushrooms. It is still a question what is the largest mushroom that has ever been produced,—the London *Journal of Horticulture* describes one placed on its editorial table, that was nine and one-half inches in diameter, and thirty-one inches in circumference, and weighed over one pound.

A CHAPTER ON PEARS.—On my father's farm in western New York, was a pear orchard of 250 trees, half each of standard and dwarfs, set alternately in the row. It was located in a natural basin—hills surrounding it on all sides, also a wooded ravine on two sides. The trees were all on the level land except one row which was on the side hill or a gentle slope; here grew six standards of the Sheldon variety. They were fine shaped trees, made so by thorough pruning, and bore every year good crops of russet coated pears. At the top of the hill was the dwelling, and on the south the garden; but in the sod joining the garden proper three dwarf Sheldon trees were planted, which in a few years were banked up and grew into standards—tall, straight, large trees. They never received any cultivation or manure to mention. They bore every alternate year very heavy crops, but never failed to bear some fruit each year—and *such pears*, so delicious, melting in one's mouth almost at once, and their dark bronze coats, smooth and glossy, were a delight to the eye. The trees in the orchard received cultivation, every year being in heavy crops for some length of time, and far more attention given in way of pruning, manuring, etc., but the fruit was so different, being more acid and of coarser grain. But for canning they were preferable to the others; but for dessert they were not to be compared. The soil in both cases was heavy clay loam. In the garden were dwarf trees of Virgalieus and Louise Bonne de Jersey. The Virgalieus in the orchard cracked badly, and were often spotted, small and unfit for market, while those in the garden were always without exception large, fair fruit, but never as highly colored, as rich and buttery as those in the orchard. The Louise Bonnes in the orchard were pictures of beauty in gold, crimson, and green, and a richness in the acidity that was lacking in the garden tree, but it was always loaded with large, smooth fruit but never any golden tints in the coloring. There were no stones in the garden; but the pear orchard was a natural rockery. Every spring for many years they were picked off, but after each following more appeared. As a child I used to think they must grow. My theory is that these stones drew and concentrated the sunshine, making the difference in the coloring and richness of the fruits mentioned. There were several orchards in the town, but no Bartletts, Virgalieus, or Bonnes compared with ours in high coloring and flavor; this was noted in the markets. In a trip through Arkansas a year ago last fall, I noted the land through the fruit region was mostly rocky soil, of different shades of red and yellow. Wild grape vines grew to enormous size. Arkansas is the seedling ground of the world. No one can account for the extraordinary quality of her seedling apples and pears, some of them being of surpassing excellence and beauty. I saw specimens of Le Conte and Kieffer pears that were wonderful in size and coloring. The Howard County seedling pear ought to be better known, as its fine flavor and beautiful coloring is unusual.

MRS. FREDERICK C. JOHNSON.

IMPROVED NUTS.—R. M. G., Philadelphia, asks:

"What can you tell me of the Paragon and any other varieties of cultivated chestnut? May I inquire also of hickory, walnut, or any other varieties of nuts that can be cultivated in this latitude?"

The Paragon chestnut was raised on the grounds of the late W. L. Schaeffer, near Philadelphia. It was a seedling, and the nuts were of somewhat larger size than the ordinary Spanish chestnut seedling usually produces; but it was supposed for some time to be an American chestnut of unusual size. It was largely propagated and sold as such; but though it is still claimed by some growers to be an American seedling, it has been clearly shown that it is merely a large sized form of the Spanish. Like all other grafted trees, the fruit is produced earlier on young trees than those raised from seedlings, and this fact caused it at first to be claimed to be an early bearing variety. It is doubtless a good sort of the Spanish chestnut.

There is also another variety of the Spanish chestnut, of large size,—it is called the Numbo. It is even of larger size than the Paragon. Both of these varieties have been largely planted through Pennsylvania and New Jersey for commercial purposes.

The Japan chestnut is also a very desirable sort,—the fruit is very much larger than either of those named above; but perhaps not of as good quality. Its great value lies in its very

JAPAN CHESTNUT

early bearing qualities, it being a common occurrence for trees of but four or five year's growth to fruit. The nuts can always be distinguished from the Spanish or American chestnut by the receptacular scar which extends to near the medium line of the nut, as represented in annexed cut.

It does not make a large tree, and can be trained either as a tree or left to grow as a large bush.

The shellbark, black and English walnut, and the filbert will also thrive in this state. Of the English walnut there is an improved variety called the Præparturiens. It is a very early fruiting sort, and does not make as large a tree as the ordinary English walnut. Trees of five or six years growth will bear fruit. The quality is about equal to the English. Of the filberts, there are many improved sorts; but the best varieties are probably the *Bergeri*, *Geante de Halle* and *Merville de Bollewieller*.

BIOGRAPHY AND LITERATURE.

SWEET MEMORIES.

"Give us again the crazy, clay-built nest,
Summer, and soft unseasonable spring,
Our flowers to pluck, our broken songs to sing,
Our fairy gold of evening in the West;—
Still to the land we love our longings cling,
The sweet, vain world of turmoil and unrest."

—MRS. GRAHAM TOMSON.

DR. J. BERNARD BRINTON.—The wide circle of botanists in correspondence with Dr. J. B. Brinton, of Philadelphia, will regretfully receive the news of his sudden demise, from neuralgia of the heart, on Thursday, December 6th. He was born at New Hope, Pennsylvania, on August 16, 1835. He was a graduate in medicine, was a surgeon in the regular army, and medical purveyor of the Army of the Potomac under General Meade. He was a member of the Council of the Academy of Natural sciences of Philadelphia, of the Botanical Section, and one of the chief founders of the Philadelphia Botanical Club.

RAFINESQUE.—Few great men have been so much misunderstood as Rafinesque. In some respects he deserves a great deal more praise than he has received,—in other respects he has been over-praised. Professor Richard Ellsworth Call, of St. Louis, Ky., has had unusual opportunities of studying documents in relation to Rafinesque, and in January, he will issue, through John P. Morton & Co., Publishers, of Louisville, a life of this celebrated man, which will, no doubt, be received with much interest by the whole scientific world.

DR. CHAPMAN.—Dr. Alvan Wentworth Chapman, the well known and estimable author of "The Flora of the Southern United States," is another illustration of the fact that an industrious pursuit of science tends to longevity. He was born at Southampton, Mass., in 1803, and graduated at Amherst, in 1830. He removed to Appalachicola, many years ago. He is still hale and hearty and has nearly completed a third edition of his great work on Southern Botany.

SHRUBS AND TREES.—There seems to be a difficulty in the minds of some horticulturists, as to how to distinguish a tree from a shrub. Some plants which are usually classed as shrubs, occasionally grow up to have trunks of considerable size. This is true of the common white dogwood, the Judas tree, the snowdrop tree, and many others. The rule in nurseries is, to classify all those plants which have a tendency to branch out from the base, and to flower freely when quite young, as shrubs, while a tree is one which grows straight up with a leader, having no tendency to branch until it gets of mature size. It is almost impossible in nature, to draw a dividing line anywhere. There will always be some individuals to overlap the finest drawn distinctions. It is then that description and differences of opinion come in. There is never any difference of opinion as to when it is day or when it is night, except when twilight occurs, then some would consider that the twilight ought to be classed with the day, while other parties would insist that the twilight really belongs to the night class. It is in this border land that a difference of opinion always arises.

KIEFFER OR "KEIFFER" PEAR.—In the appendix of Downing's fruit book this famous pear is spelled "Keiffer," while the proper orthography should be "Kieffer." There is no use naming anything in honor of another unless the name be correctly spelled. There are a large number of persons of the same name in this section of Philadelphia all spelling their names "Keiffer." It is strange that so many persistently spell the name so differently from that in which the raiser of this pear spelled it.

GEO. PINNEY.—Mr. Geo. Pinney, well known in connection with the introduction of evergreens in the West, and who made a creditable exhibit of evergreens at the Columbian Exposition, died on the 2nd of November, at his home at Sturgeon Bay, Wis., in his sixty-second year.

THE PEACH IN AMERICA.—One of the misfortunes of history is that it is not attracted to any subject until something occurs to show that the event which it records ought to have been one of importance. When we look at the vast importance of the peach industry of the United States, history naturally aims to discover to whom is due the credit of starting an enterprise of so great a value. Just how the peach was first introduced into America no one seems to know; but history just now is trying to find out. The Baltimore peach growers contend that it was first introduced into this country by Thos. Robins, who planted some peach stones obtained from Prussia on some land which he owned in Maryland, about two hundred years ago. There seems to be no direct evidence of this, and we are safe to venture an assertion that it was introduced as early as any of our fruits, through the medium of the French and English colonists, who had plenty of stones from the cultivated trees in their old world homes.

INFLUENCE OF FORESTS ON SPRINGS.—The senior conductor of MEEHANS' MONTHLY has been a life-long advocate of forest preservation and forest planting, but could never see much force in the argument that forests did much to fill up the springs. Trees store the rain or melting snows for their own use. It is broken rocks on mountain ridges that help springs. Usually there is no ground so dry in the summer season as that under a forest. The note appended, from Mr. J. D. Lyman, Exeter, New Hampshire, states this fact exactly:

"The ground under thrifty forests is not damp during the warm months—the trees suck it dry—the fast growing trees drain their mother earth dry as the hungry child does its mother's breast. The same with all rapid growing plants."

THE GRAPE CULTURIST, by A. S. Fuller.—The test of a good book is in the public demand for it. A third and revised edition of Mr. Fuller's book shows its value. Mr. Fuller is widely known as an eminent horticulturist. It was in connection with grape culture that his first prominence in that line was recognized. Orange Judd Company, New York, are the publishers.

BACTERIA.—Most of the diseases that afflict plants and animals are now attributed to small minute organisms called bacteria, and yet the manner in which the work is performed is something of a mystery. Many believe that, in animals, the injury which bacteria do, comes from their power to introduce nitric acid, in injurious quantities. One singular feature about them is that different kinds do not seem to be able to live in harmony together. Vinegar, for instance, is the result of the action of a species of bacterium, and yet it is able to destroy almost all, or perhaps all other species with which it comes in contact. It is bacteria which first by their presence turn sweet apple juice into cider. After this has been accomplished they disappear, and a new set takes their place, which changes the cider into vinegar. It is on account of this peculiarity of a bacterium of insisting on having the whole field to itself in disease, that vinegar is so useful in various disorders of animals, as this bacterium is found to destroy others of its family. In cases of cholera or similar diseases in animals, vinegar has been found to easily destroy the other bacteria which cause so much trouble.

THE SEXES OF FLOWERS.—The Reverend Professor Geo. Henslow, tells the London *Journal of Horticulture*, that the production of the different sexes in flowers largely depends upon nutrition. The rule is that male flowers appear on the weaker stems, while the female flowers appear on the stronger ones. The practical result of this lesson is that by concentrating the energy which the plant is expending on a few vigorous branches instead of scattering it over many weak ones, plants which usually produce male flowers only, may be made to bear female ones. This value of the law prevailing in the production of the sexes of plants was first announciated by the writer of this paragraph in an address before the American Association for the Advancement of Science, at Salem, Mass., about a quarter of a century ago. It was strongly opposed at that time by Professor Agassiz, but was supported by Professor Russell and E. D. Cope. It is gratifying to find that time has sustained what was then regarded with hesitation. The principle is now assumed by the Encyclopedia Britannica and other leading authorities, as the undoubted law of nature.

GENERAL NOTES.

BUSHNELL PARK, HARTFORD, CONN. — Nothing is more gratifying than to note the progress which public parks are making in connection with larger American cities. We give with this on page 9, a view of Bushnell Park, at Hartford, Conn., taken from a point at the corner of High and Asylum Streets, looking towards the south, and showing the State Capitol, which is built on the old Trinity College grounds, and showing also the Soldiers Memorial Arch. It is considered one of the most beautiful of our American public parks.

SCHOOL GARDENS.—Mrs. Henrietta L. T. Wolcott, reports to the Massachusetts Horticultural Society, that the old "window garden" committee of that society was not so much of a success, but that it has drifted into a committee on "school gardens," and that this is becoming a valuable adjunct in school education. The children love to sow seeds in pots or boxes in the school windows and watch them grow. It is said that the observing faculties of the children are wonderfully enlarged by this little experience, and that the subsequent education becomes much easier. The old idea, of having little gardens for children to look at, has not proved the wisest one; but giving little children something to do themselves, as in sowing seeds and watching their growth, makes a great difference.

THE COST OF COMMISSIONS.—The recent comment in MEEHANS' MONTHLY, on the useless waste of public money involved in the so-called "Russian thistle bill," is calling public attention to the great evil of costly commissions for all sorts of subjects, which seems to be a craze, at present, with most legislatures. A Californian paper states that various commissions in that state have cost the tax payers in fifteen years, $2,222,181. Strange to say that the larger proportion of this money goes to public printers. Over $300,000 of the money having been spent for this purpose. The larger portion of the documents printed by these commissions, goes to the waste paper mills. It is very rarely that they contain anything more than appears in the regular agricultural or horticultural journals, and in a general way are not really up to the information which these serials give.

THE COLORED PLATES IN MEEHANS' MONTHLY.—A Nevada correspondent says:

"The gentian in the November number of your magazine is lovely. I do not know but it is finer than the 'Trillium.'"

Botanically accurate pictures of flowers are common, — but the pictures in MEEHANS' MONTHLY are, in addition, works of art that, it is pleasant to know, are widely appreciated.

AMERICAN COLUMBINE.—In selecting plates for illustrating our native flowers, the effort is to represent as many natural orders and widely separated localities as possible. Lessons are thus furnished on plant geography, as well as in plant structure. This month the *Pacific Coast* has a lovely illustration of its flora,— next month the eastern part of our country will have a representative in its beautiful spring-flower, *Aquilegia Canadensis*, the distinctively American columbine.

CHANGE IN MEEHANS' MONTHLY.—It will be noticed that the additional four pages have been given to the General Gardening department as it seemed to the conductors that the general demand was for an extension in this line. Additional changes will be made as they seem needed, and suggestions in this line from subscribers will be appreciated.

THE NAME OF HEMLOCK SPRUCE.—It is said that the name of Hemlock, given to this spruce by the early settlers in the east, was suggested by the great difference between the foliage of this tree and the ordinary pine, the ordinary Hemlock leaves suggesting some resemblance. This, however, is a mere guess, as there seems to be nothing on record in relation to the matter.

AQUILEGIA CANADENSIS.

CANADIAN COLUMBINE.

NATURAL ORDER, RANUNCULACEÆ.

AQUILEGIA CANADENSIS, LINNÆUS.—Glabrous; spurs straight, longer than the limb; stamens and styles exserted. This beautiful plant grows wild in most of the states, in dry soils, generally on the sunny side of rocks. It is cultivated with the greatest ease, and is much more delicate in its foliage and in the hues of its flowers than the common blue columbine. Stem branching, a foot high. Leaflets 3-9, cuneate, lobed. Flowers terminal, scarlet without and yellow within, pendulous, much embellished by the numerous descending, yellow stamens and styles. Fruit erect. (Wood's *Class-Book of Botany*, See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern States*.)

Plate 7, in series I, vol. I, of "The Native Flowers and Ferns of the United States," is a representation of one of the Rocky Mountain columbines, *Aquilegia chrysantha*. Its eastern sister, *Aquilegia Canadensis*, now worthily takes a place beside it. Each has its separate district. The Canadian columbine does not extend far beyond the Mississippi, and the golden columbine appears as we approach the Rocky Mountains. In the Atlantic states the Canadian columbine has a wide range, being found far to the northward in Canada, and has been found, though sparingly, in rocky places as far south as Florida. It is seldom found anywhere except among rocks, though it has been noted in some low sandy places in New Jersey, though not in considerable quantity,

It was among the earliest of our wild flowers to attract the notice of Europeans, and it is said to have been obtained for King Charles' garden by Tradescant, his gardener, from Virginia in the early part of the seventeenth century. One author puts the exact date as 1640. All the European forms were of bluish or purple shades, and the introduction of the bright and beautiful American must have been a surprise.

Before the time when Linnæus took in hand the task of cutting the names of plants down to a noun with its adjective,—that is, introduced the binomial system,—this was known as "Aquilegia nectariis rectis staminibus corolla longioribus." The long straight nectaries, and the much exserted stamens and styles were seen to divide the species characteristically from European forms. Cornutus, who wrote of Canadian plants, however, wrote of it as "Aquilegia pumila præcox Canadensis," and it is easily seen how Linnæus obtained the specific name. In many cases, as in this, the last word in the old descriptions was retained for the specific designation in his binomial plan.

The derivation of the name Aquilegia has been the subject of speculation. The following quotation from Dr. Bromfield gives in a condensed form the substance of what is generally said on the subject: "Columbine, from *columba*, a dove,—and the Latin generic one of Aquilegia, may, with as much probability have been intended to designate a gathering together of eagles, from the same bird-like conformation and grouping of the flowers." The inverted flowers have precisely the look of the conventional representation of the Roman eagle,—and there could be no difficulty in surmising that the name is derived from *Aquila*, an eagle, and *lego*, to gather,—a gathering or collecting together of a company of eagles. This form of the words is preserved in the ancient Roman city of Aquilegia, founded a little before the birth of Christ, and for a time a rival to Rome itself, — the name implying that it was at first the residence of a deputy or legate of the Roman eagle.

The name as applied to our flower is fully accounted for by a pretty story in ancient mythology, which cannot be better told than in the quaint language of an English author of the seventeenth century:

"Aquilegia was the Daughter of Jupiter, by the Nymph Moria, who proved to be the celebrated Beauty of her Age. She thought no Mortal worthy of her, unless he sprung from

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"Aquilegia was the Daughter of Jupiter, by the Nymph Moria, who proved to be the celebrated Beauty of her Age. She thought no Mortal worthy of her, unless he sprung from

INTENTIONAL SECOND EXPOSURE

Divine Blood. This indeed was but keeping up to the Dignity of her Rank. But she forgot herself very much, when disdaining to hear *Ganymede* that courted her,—she had the folly to give the preference to the *Eagle* that carried him, and could not look upon her but with a wild fierce Eye. Ganymede, with all the attractive Qualities granted him from Heaven, could not influence her affection,—and tho' she often gave him the Meeting, 'twas only to have an opportunity of seeing the *Eagle*, whom she lov'd. Things troul'd on after this rate for some time, till *Ganymede*, tir'd out with *Aquilegia's* Affronts, did justice to himself, by taking care always to keep the *Eagle* out of her sight, that she long'd so passionately to see,—upon which she wither'd and died of Grief. Jupiter turn'd her into a *Flower*, and perceiving that as the *Flower* blow'd, part of her Leaves form'd a sort of *Eagle's Beak*, (so deep was the Impression of that Animal upon her when she died) he gave it the name of *Aquilegia* from *Aquila*, an *Eagle*." The ancient author, seeking to draw a moral from the story, sagely remarks: "We never forget ourselves more, than when we give way to unreasonable Love,—for then 'tis not Love that works within us, but Passion, that aims at nothing but a Shadow, and being only capable to decieve and disappoint us, can't, in the end, but cause great uneasiness." Perhaps, after all, had Aquilegia had any premonition that she would live as such a beautiful flower to the end of the world she might have felt some compensation for her broken heart, and might not have deeply regretted the "Passion" which brought her to her mortal end. As our species is always found among rocks or steep craggy places, the home of the eagle, there is yet room for some poetical flight of fancy to commemorate the American plant.

The strong woody roots (Fig. 2) descending deeply into the earth, enable it to feel at home in the wild places that it adorns,—while the rocks themselves gather the leaves which, rotting, make the rich food in which it delights. Along the Wissahickon, from whence the specimen illustrated was taken, no prettier floral scene could be imagined than one that came under the eye of the writer. Among the loose rocks at the base of a huge crag, some blue hepaticas, spring beauties, and the whitish-pink flowers of the *Sanguinaria*, or blood-root, mixing with the green of a number of the evergreen fern, *Aspidium acrostichoides*, was equal to a mass worked out in a flower garden by some artist in landscape gardening. Higher up in the crevices of the crag, mixing with a number of the common polypody, *Corydalis glauca*, was blooming profusely. The great variety of trees and shrubs had about fully expanded that portion of their annual foliage that had been partly formed in the autumn, and protected by the bud-scales during the long winter season, and made the sort of half-shade which gives a peculiar charm to forest scenery at that spell-binding season of the year. But few items added more to the scene than the Canadian Columbine afforded, often endeavoring to crowd down some projecting rock, which would rear its head proudly above the flowers for all. This was more than a quarter of a century ago. The rapid advance of the crowded city, and with it an army of wild flower gatherers, have seriously interfered with its efforts to beautify the scenery.

An outline of the five-lobed seed vessel is given at Fig. 3. It much more nearly resembles the "talon of an eagle" than the nectaries, but no author seems to have suggested the likeness. There has been much speculation in regard to the relation between insects and flowers, and the peculiar structure of flowers in special cases, as in this of *Aquilegia*, has been accounted for by suggesting that the long spurs or nectaries were arranged as they are in order that some particular long tongued creature only should get at the sweets.

The nectaries are filled with sweets, which do not seem to flow out, for all the inverted position. Bees visit the flowers freely, both for honey and for pollen. Other species of columbine, especially those from the Rocky Mountains, seem to hybridize freely with the European, when grown together in gardens. It is supposed that this is through the agency of bees. This species, however, does not vary from seed in this way, possibly from the early flowering—in advance of other species. Near Philadelphia it is one of the earliest of April flowers,—though a few are produced so late as the end of June.

EXPLANATION OF THE PLATE.—1. Full-length branch of a Wissahickon specimen,—the balance of the branch, with the upper portion of the root at Fig. 2. 3. Outline of seed vessel.

WILD FLOWERS AND NATURE.

A WINTER SCENE.

Winter is now around me, and the snow
Has thrown its mantle over herb, tree, flower:
The icicle has tapestried the bower,
And in a crystal sheet the rivers flow;
And mustering from the north, at evening, blow
The hollow winds, and through the star-lit hour
Shake from the icy wood a rattling shower,
That tinkles on the glassy crust below.

—PERCIVAL.

TEABERRY.—Miss M. S. Foote, Woodbury, N. J., inquires what is the derivation of the word "teaberry" as applied to *Gaultheria procumbens*. No work at our command gives the information, but we take it for granted that during the Revolution, when so many plants were used instead of Chinese tea, which was cut off by the Revolutionary War and many plants were tested as substitutes, this was probably one. The aromatic flavor is not unlike some brands of Chinese tea.

A TWIN DAHLIA.—Mr. H. K. Morrell, of Gardiner, Me., sends a twin dahlia, growing back to back on a single stem. This is in the same line of instructive lessons which were furnished recently in the case of the *Rudbeckia*. We are taught by these cases that the flower stem is really a huge bunch of leaves, stems or flowers,—or rather of elementary structures which may take on these forms. The compound flower itself, illustrates this to some degree, for the little florets which make the compound flower must have some independent platform, so to speak, of their own. Their individual stalks have all been absorbed into one common flower-stem. In the case of the dahlia, here referred to, there is really a leaf and axillary bud just beneath the point of union of the twins, showing that the whole flower stalk might very easily have been a branch, if only nature had so determined.

CLIMATIC EFFECT.—The effect of climate on the flowering periods of plants, varies remarkably with the plants themselves. During the season of 1893, the common Mountain or Moss pink, *Phlox subulata*, which is among the earliest of our spring flowers, blossomed again profusely, in October. The beds of these plants were ablaze with blossoms, just as they might be expected in March or April on their mountain-sides. This season, however, not a solitary blossom appeared in the autumn, on the same beds. On the other hand in 1893 *Daphne cneorum* had not a blossom in the fall, but this year the beds were more abundantly in blossom than they were in the spring time. Both seasons were famous for their summer droughts, and it is inexplicable why such different results should occur in the two cases. The reasons for these behaviors of plants are becoming one of the most interesting pursuits of the lovers of gardening.

INDIVIDUAL HARDINESS OF PLANTS.—If one will examine an osage orange hedge, after the first frost, some plants may be noticed as having retained all their leaves perfectly green, while the other plants have had their leaves frost-bitten and destroyed. We say these plants are hardier than those which have lost their leaves. This variation in degrees of hardiness is common to all kinds of plants. The common Purslane, after the first frost, may be noted as having a few plants still green and fleshy, while the majority are killed, though still retaining the green leaves, often to be found intertwined with those which have been killed. This shows a few plants hardy enough to resist a little frost, while the rest are more tender. This fact can be taken advantage of by the improver, for all variations in plants have a more or less hereditary tendency. If a very hardy race is desired, these hardy ones should be selected for seed. There is, of course, a limit to even this form of variation; and species usually killed by frost, or which may have a few individuals capable of resisting two or three degrees, are not likely to get much beyond this. Cultivators of the orange or lemon in California or Florida, might well profit by facts like these.

POLYMORPHIC FORMS OF FUNGI.—It is not so many years ago that it was clearly demonstrated that the rust which attacks wheat and the rust which attacks berberry leaves could all be produced by the same spores,—yet when growing on wheat and when growing on the berberry they seem so distinct as to be regarded as different genera. This is now found to be true of many of these similar organisms. The fungus which is so destructive to the leaves of the quince, the hawthorn, the Indian cherry, and some other fruits, can be produced from the same fungus that produces the cedar galls of the red cedar,—*Juniperus Virginiana*. The fungus which produces the cedar galls has been called *Gymnosporangium clavipes*, while when it attacks the quince it has been regarded as *Roestelia aurantiaca*. Some say, therefore, that to have healthy apples and quinces one should cut away all the red cedars that may be growing near; but the question should first be settled whether it is the cedar that starts the trouble with the quince, or whether it is the quince that first starts the trouble with the cedars.

CALIFORNIA POPPIES.—True poppies may be said not to exist in California, for although among the wild flowers one species has been found, it is comparatively rare, and no one but leading botanists know of it. But the poppy family furnishes many of the beautiful wild flowers of California. One of the most beautiful of these is named *Romneya Coulteri*, but which as yet has no common name. The *Pacific Rural Press* gives the following account of its origin and habits:—

"The genus was named *Romneya*, in honor of the Rev. Dr. T. Romney Robinson, a noted astronomer of Armagh. It is a shrub, usually from 5 to 15 feet in height, half-woody at base and does not die down, but needs to be pruned well back in the fall. It is one of the finest of California plants. In early spring vigorous shoots start from the dormant roots and grow from 6 to 10 feet high. The large hairy buds open at daylight; the crimped petals slowly unfolding from over the huge bunch of stamens (the bunch as large as a walnut) until they spread out from 6 to 9 inches. They last several days, the buds opening well in water.

The foliage is very effective, and makes with the flower a very beautiful and artistic study. There is a delightful harmony between the much-divided glaucous foliage and the waxy-white flowers, which makes it much admired as a decorative plant.

The Romneya occurs from Santa Barbara county, southward into San Bernardino and San Diego counties, and below the Mexican boundary nearly to San Quintin bay, Lower California. It is seen at its best in San Diego county and in Lower California, where it may be found growing along the borders of streams, in the richest and most fertile portions of our valleys, or on the dry mountain or hillsides and in sheltered canyons on the warmest, driest and most unapproachable slopes. It is mainly confined to the foothills and valleys near the coast."

Besides this pretty member of the natural order of *Papaveraceæ* there are numerous other beautiful representatives, of which the well known golden poppy, *Eschscholzia Californica*, well known in gardens, also belongs. This has also the distinction of being confined wholly to California, and some believe that on this account it might be taken as a floral emblem to represent the State of California, should such State emblems ever be adopted.

ECCLESIASTICAL BEES.—In California, where there are comparatively light winters, and flowers to be had all the year, the honey bee does not seem to care about the fostering protection of man, but makes its home in the wilds where it chooses. A California paper speaks of a large colony having taken possession of the roof of an Episcopal church, but as they interfered with nobody, nobody interfered with them; but when the recent hot weather came, and the honey melted and flowed in streams down the walls of the building it was considered a little too much of a good thing, and some one had to be found to clear out the little workers. He got one hundred pounds of honey for his fee, without the necessity of scraping the walls to get the overflow.

THE YELLOW TRILLIUM.—Thos. G. Harbison, of Highlands, N. C., writes that the yellow flowered species of Trillium is occasionally found in that locality.

The species is probably *Trillium erectum*, which in North Carolina is often yellowish.

HELIOTROPIUM CURASSAVICUM AND RARE PLANTS IN DAKOTA.—Mr. J. M. Dunlop kindly furnishes the following note:

"This elegant heliotrope can be found on the saline margins of Long Lake, South Dakota. The lake recedes during the summer months, leaving a wide margin made so rich with alkali from the washings of the burnt prairie that little else grows upon it. In many acres of heliotrope the only other plant I observed was *Ammannia latifolia*. It grows about a foot in height, with pure white flowers and a lemon colored eye. It is very fragrant. The leaves are of a light green color, and veinless. A few acres of it are a sight worth traveling some distance to see. Long Lake is six miles south of Woonsocket, S. D., and is worth a visit to any plant enthusiast. The six mile walk is delightful in July or August. In that walk I have found many plants new to me, but common there. Among them are *Malvastrum coccineum*, *Schrankia uncinata*, *Grindelia squarrosa*, *Lepachys columnaris* and *Dalea alopecuroides*."

THE FRUIT OF THE BITTER-SWEET.—The "Brazen berries of the Bitter-Sweet" is a pretty alliteration employed by E. Newlin Williams, of New Hope, Pa., describing the fruit of *Celastrus scandens*, in an essay before an association of popular science inaugurated in that town. How arose this common name "Bitter-Sweet?" The name is employed in Europe to *Solanum Dulcamara* as the Latin specific name implies. Is the name given to the celastrus merely a transfer from some resemblance in the fruit?

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BLACK SCALE ON PALMS.—Mr. Edwin Lonsdale, the genial President of the Society of American Florists, has this to say of a recent inquiry about the palm scale insect:

"After trying everything that has been recommended we have found nothing to equal sponging. When once clean they can be kept so by an occasional syringing with fir tree oil, or even tobacco water or whale oil soap say once a week. But to kill these insects outright we have never yet been able to use anything strong enough without injuring the plants."

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INTENTIONAL SECOND EXPOSURE

STUDIES IN PLANT-LIFE. — Among the reports which regularly issue from the Agricultural Experiment Stations, none reach a higher plane than those issued by the New Jersey Agricultural College Experiment Station. The annual report for the year 1893,

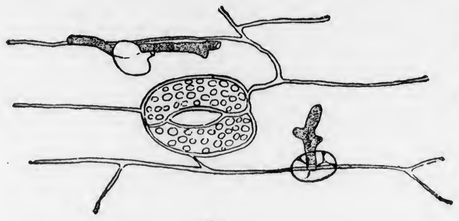


Fig. 1.

part first, is now before us. Particularly instructive is the portion of the report devoted to plant diseases. This portion of the report is from the pen of Dr. Byron D. Halsted. It deals with the different parasite fungi which attack the strawberry leaf, cabbage, turnip, cauliflower, bean, watermelon, cucumber, pea and various kinds of vegetables, and considerable attention is given to the various fungus parasites that attack the apple. A number of ornamental flowers such as the carnation, hollyhock and various bulb-bearing plants are also dwelt upon, and the little organisms that induce many diseases are beautifully illustrated. Few people understand how these

Fig. 2.

parasites get to work in their destructive business. They all spring from invisible spores which seem to be continually floating in the atmosphere,—just as little particles of organic matter may be found floating in water,—and when they reach a satisfactory place for germination, they then develop into little plants which are as beautiful when seen under magnifying power as any tree which we can see by the naked eye in any large forest. Fig. 1 shows the surface of a leaf of a lily with one of these spores in the act of entering the leaf. On finding itself in contact with a stomata, which is popularly known as the breathing pore of a leaf, it enters and then develops rapidly. Fig. 2 is a magnified portion of leaf-surface tissue showing the spore's condition when it has developed to a perfect plant, and is now again ready to cast its proportion of spores into the atmosphere, to float away to some other field of labor. Fig. 2, is a species of Botrytys which delights to live on the lily family; while Fig. 1, is another species of the same genus which prefers the onion for its food. This valuable work is distributed to all who apply to the Director of the Experiment Station, at New Brunswick, N. J.

A MIDGET AMONG FRINGED GENTIANS.—Mr. C. F. Saunders, Philadelphia, hands in the following very interesting note:

"Yesterday, Oct. 28th, near Lenni, Pa., I came across some plants of the Blue Fringed Gentian (*Gentiana crinita*) in bloom, which interested me because of their Lilliputian dimensions. I had the curiosity to measure the smallest and found it to be a shade over half an inch from the ground to the base of the solitary terminal flower, while the flower from base to tip was five-eighths of an inch more, making a total height of 1⅛ inches. The diminutive plant seemed perfect in every respect, of a good healthy color, and enjoying life quite as much as its normal sized brothers."

CROTOLARIA RETUSA.—This is known as the Florida Sweet Pea. It is regarded as one of the most beautiful of southern wild flowers, and is rapidly finding a place in flower gardens. The flowers are of a bright golden yellow color.

CARNIVOROUS ANIMALS.—There is no flesh-eating creature but will turn to vegetable food in an emergency, and some rather enjoy the change. Many a dog will steal to the corn-field for a meal of the grain,—and will often go a long distance to get a taste of a persimmon.

GENERAL GARDENING.

THE GRAPE ENDURES.

The Grecian mound, the Roman urn,
Are silent when we call;
Yet still the purple Grapes return
And cluster on the wall.

A GARDEN IN AN ATTIC.—It has often been noted that some of the most successful gardeners, and the shrewdest introducers of new thoughts in gardening are from the ranks of amateur flower-lovers who had no early training in that direction. But this is in accord with the general natural law that labors of love are more productive of good results than labor for hire. Mr. Rudolphus Bingham, on Marlton avenue, Camden, New Jersey, is a case in point. Starting with no other horticultural capital than a love for flowers, he has arranged one of the most successful of aquariums on the whole of the third story of the back buildings of his residence. In this he grows to the greatest perfection, the various forms of African water lilies known as *Nymphæa Zanzibarensis*, *Capensis* (commonly known as cœrulea, azurea, etc.,) *rosea*, *dentata*, etc. Some of the plants in this dwelling house aquarium have leaves sixteen inches in diameter, while the plants produce flowers continuously from early June till the end of November. The aquarium room is covered by a glass roof. The heat from the sun is nearly sufficient, but waste heat from the kitchen and dining room is passed up by ventilating flues. A few other plants, such as geraniums and abutilons are grown with the others. These lilies bloom by day, and close at night, but by passing a circle of wire round the base of the stamens, and fastening this wire between the petals around the stem, Mr. Bingham forces the flower to remain open at night, and prides himself on the belief that November the 5th, 1894, marks a calendar day when the first expanded water lily was made to expose its beauty and shed its delightful fragrance for the entertainment of an evening party! It will be taken for granted that the person represented in the picture, see page 25, is Mr. Bingham in his "robes of office," attending to his pets, and he may well wear the self-satisfied expression that dwells on his countenance as he looks on his successful work.

SHRUBS WITH COLORED BARK.—It is during the winter months that shrubs having bright colored bark are appreciated. There are now several different plants having this peculiarity, and it is possible to plant groups, giving a variety of color. The red-stemmed dogwood has long been planted on this account; but more recently, varieties of willows have been used to a large extent. *Salix Britzensis* has bright red bark; much brighter than that of red-stemmed dogwood; while the bark of the *Salix vitellina* is yellow. The purple-leaved plum can also be utilized in this way, as the bark of the young shoots is of a dark purple color.

As the brightest coloring is always on the young wood, the plants should be severely pruned during the winter, in order to force a strong and vigorous growth. A large group of the two willows named, planted quite a half mile from the residence of the writer, gives a pleasing touch of color to the landscape throughout the winter.

SURFACE MANURING.—The "German Kali Works" issue excellent instructions for restoring exhausted soil. A point they make in regard to a crop of clover is so true of most other crops that it will bear repeating. "In order to get the land in good condition for clover or alfalfa, it will be necessary to make a good rich surface soil." When we dig up a plant innumerable hair-like rootlets are seen. These are technically called fibers,—though the term is often used by tree-planters to designate small rootlets. These fibres are feeders. They will always be found in greater numbers near the surface. It follows that the best position for food in the case of any plant is near the surface.

TRUE TASTE IN LANDSCAPE GARDENING.—To illustrate incongruities in landscape gardening, a well-known author has stated that "every one laughs at a silk dress on a beggar." Truly the sense of fitness is one of the guides to an appreciation of beauty. The aim of the true landscape gardener, is to make nature seem more natural when she is in her own sphere, and to delegate the more artificial expressions of the gardener's art to help along the artificial works of man. Too often this appropriateness is violated. Instances may be seen where a natural rivulet through a garden is "illustrated" by artificial gardening that "the silk dress on the back of a beggar" comes forcibly to mind. But there are instances of the reverse. With this is a representation of a scene in Fairmount Park, in Philadelphia, after a design by Mr. Charles H. Miller, the landscape gardener of the Park. The bridge over the stream is a necessary work of art. This renders some relation between art and nature desirable which is well secured by a few clumps of rhododendrons and other shrubs, until gradually the naturalness of the stream and surroundings asserts itself. The picture furnishes a good lesson in harmony in landscape gardening.

VARIATIONS IN HARDINESS OF TREES. — Apropos to your note on *Araucaria imbricata* in your issue of November, 1894, page 171, would say that this plant is entirely hardy in Dublin, Ireland, and I have heard of it being hardy in Aberdeen, Scotland. There is a plant of it—or was very lately—in Trinity College Botanical Gardens, Dublin. under the care of that great plant lover and botanist, W. F. Burbridge.

In the winter of 1879–'80, the thermometer went down as low as 4° Fahrenheit, in that vicinity, and killed plants of *Eucalyptus globulus*, 15 feet high, and several fine plants of *Cordyline* (*Dracæna*) *indivisa*, which till then had passed, uninjured, many winters. Bay laurels (*Laurus nobilis*) were cut to the ground that winter, but *Araucaria imbricata* stood unscathed. It is strange how some plants will stand a degree of cold in one country which they will not endure in another. *Thujopsis dolabrata* is scarcely hardy in Dublin, yet here in Mr. Wm. Barr's gardens, in Llewellyn Park, they have lived outside, entirely unprotected, these last six years. *Azalea amœna*, or, as some prefer to call it, *Azalea obtusifolia*, blooms finely with us; yet it does not succeed so well in the northern districts of Ireland.

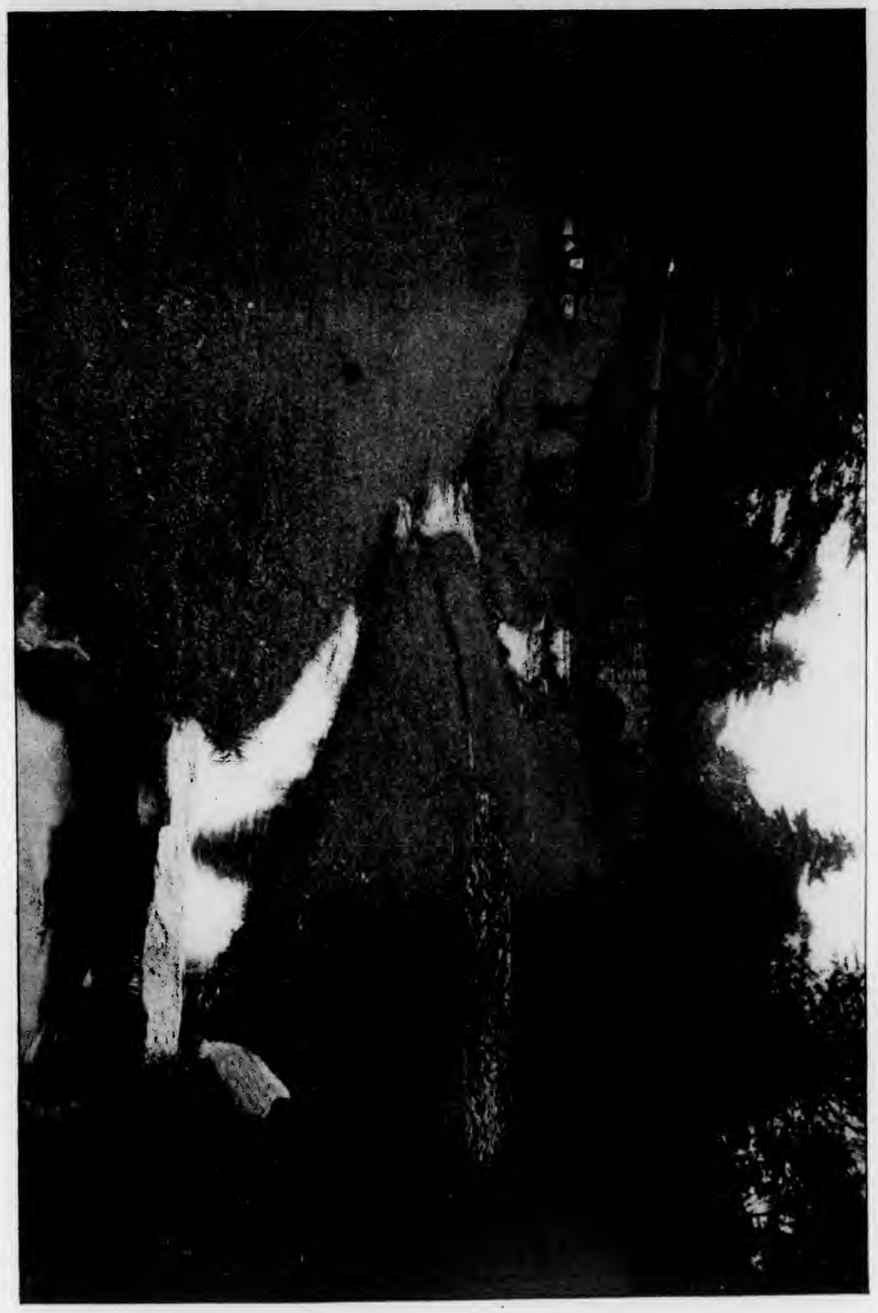
WM. FITZWILLIAM.

Baronald, Llewellyn Park, Orange, N. J.

This important paragraph brings strongly prominent a fact discovered some years ago, that it is the loss of moisture, rather than the degree of cold, that enters into the comparative hardiness of trees. They dry up. Bright light is a great aid to evaporation and transpiration. This is why so many evergreens do better in the shade than in the sun. They do not dry out so easily on a sunshiny winter day.

HARDINESS IN EVERGREENS. — There are often conflicting reports as to any particular variety of evergreen being hardy. In some cases they are said to resist any amount of cold, in other cases they are reported as dying under comparatively little frost; but in most cases, exposure has more to do with these results than low temperature. Almost all of the evergreens will grow together in woods or forests, or perhaps form underbrush, where they are somewhat protected from cold winds. A very large number of beautiful evergreens, now regarded as tender, would prove perfectly hardy when set out in groups together, or if planted where they would not be exposed to severe wintery blasts. Protection from wind is what they mostly desire.

THE ENGLISH IVY. — Evergreens suffer in winter much more from sunlight than from low temperature. Indeed, both with deciduous and evergreen trees, destruction in the winter is more from evaporation of the juices than from low temperature itself. Light is as great an evaporator as heat, when it comes to dealing with living things. The English ivy will endure extremely low temperature if grown where sun does not reach it in winter time. So far south as Philadelphia it is usually killed when on southern exposures; but on the north side of buildings it is absolutely hardy under any circumstances. There is nothing better for clothing the side of a building than this beautiful evergreen creeper. Its green flowers are not showy; but they are very attractive to bees and other insects, and in this way possess an interest welcomed by lovers of nature.



A SCENE IN FAIRMOUNT PARK, PHILADELPHIA

TRUE TASTE IN LANDSCAPE GARDENING.—To illustrate incongruities in landscape gardening, a well-known author has stated that "every one laughs at a silk dress on a beggar." Truly the sense of fitness is one of the guides to an appreciation of beauty. The aim of the true landscape gardener, is to make nature seem more natural when she is in her own sphere, and to delegate the more artificial expressions of the gardener's art to help along the artificial works of man. Too often this appropriateness is violated. Instances may be seen where a natural rivulet through a garden is "illustrated" by artificial gardening that "the silk dress on the back of a beggar" comes forcibly to mind. But there are instances of the reverse. With this is a representation of a scene in Fairmount Park, in Philadelphia, after a design by Mr. Charles H. Miller, the landscape gardener of the Park. The bridge over the stream is a necessary work of art. This renders some relation between art and nature desirable which is well secured by a few clumps of rhododendrons and other shrubs, until gradually the naturalness of the stream and surroundings asserts itself. The picture furnishes a good lesson in harmony in landscape gardening.

VARIATIONS IN HARDINESS OF TREES. — Apropos to your note on *Araucaria imbricata* in your issue of November, 1894, page 171, would say that this plant is entirely hardy in Dublin, Ireland, and I have heard of it being hardy in Aberdeen, Scotland. There is a plant of it—or was very lately—in Trinity College Botanical Gardens, Dublin. under the care of that great plant lover and botanist, W. F. Burbridge.

In the winter of 1879–'80, the thermometer went down as low as 4° Fahrenheit, in that vicinity, and killed plants of *Eucalyptus globulus*, 15 feet high, and several fine plants of *Cordyline* (*Dracæna*) *indivisa*, which till then had passed, uninjured, many winters. Bay laurels (*Laurus nobilis*) were cut to the ground that winter, but *Araucaria imbricata* stood unscathed. It is strange how some plants will stand a degree of cold in one country which they will not endure in another. *Thujopsis dolabrata* is scarcely hardy in Dublin, yet here in Mr. Wm. Barr's gardens, in Llewellyn Park, they have lived outside, entirely unprotected, these last six years. *Azalea amœna*, or, as some prefer to call it, *Azalea obtusifolia*, blooms finely with us; yet it does not succeed so well in the northern districts of Ireland.

WM. FITZWILLIAM.

Baronald, Llewellyn Park, Orange, N. J.

This important paragraph brings strongly prominent a fact discovered some years ago, that it is the loss of moisture, rather than the degree of cold, that enters into the comparative hardiness of trees. They dry up. Bright light is a great aid to evaporation and transpiration. This is why so many evergreens do better in the shade than in the sun. They do not dry out so easily on a sunshiny winter day.

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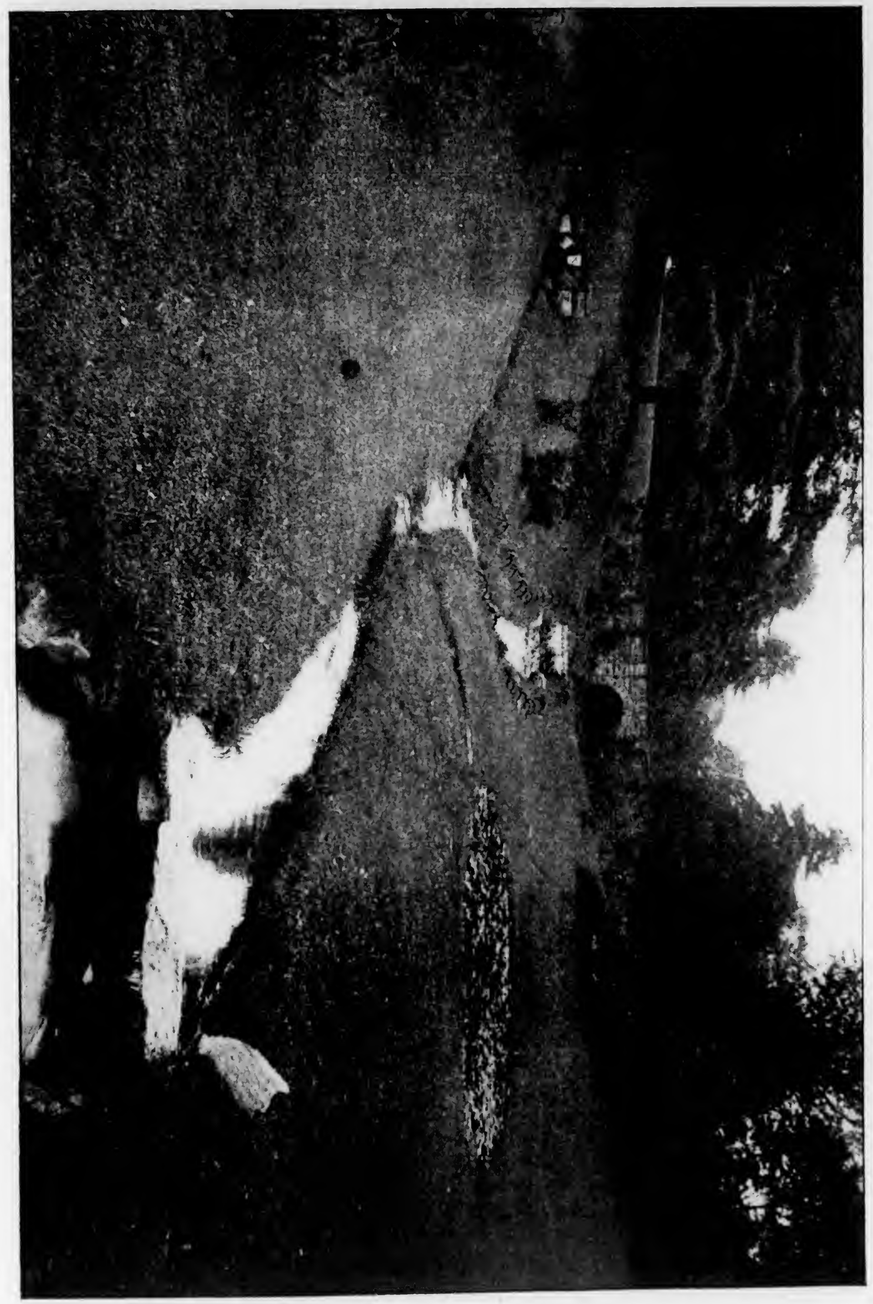

A SCENE IN FAIRMOUNT PARK, PHILADELPHIA

INTENTIONAL SECOND EXPOSURE

SHADE TREES FOR SOUTHERN CITIES.—A correspondent in New Orleans inquires which of the popular northern trees would be desirable for shade trees in New Orleans. This is a difficult question to answer in the absence of actual experiment. It is more than likely that in some of the private gardens and grounds about that city many trees common in northern gardens have been tried and would afford the positive evidence that such trees would grow well in that city. At present the most popular trees in New Orleans, for shade trees, are the Tallow Tree, *Stillingia sebifera*, and the China Tree, *Melia Azederach*, but there certainly ought to be a much larger variety to choose from. One of the most desirable shade trees in the Middle States is the sweet gum—*Liquidambar styraciflua*. As this grows abundantly in parts of Mississippi, there seems to be no reason why it ought not to be entirely successful as a shade tree in that city or other cities of the South. It is found naturally in swamps; but horticultural experience has discovered that it grows even better in dry garden soil than in its native swamps. It is a most beautiful tree in any situation.

CHRYSANTHEMUM, MRS. H. H. BATTLES.—Mr. Wm. K. Harris, the originator of the new chrysanthemum, Mrs. H. H. Battles, figured in the January number of MEEHANS' MONTHLY, says:

"I got the seed from chrysanthemum Ivory, but do not know by what variety it was impregnated, but am inclined to believe that it was impregnated by its own pollen. I got the seed in the fall of 1891, sowed it in the following spring, and bloomed it in the fall of 1892, with many others from the same source, of which several of them were good, but none having the high qualities of perfection required in these days of so much excellency."

In describing this chrysanthemum last month it was stated that the illustration was figured one-third size. This was an error, the illustration represents the flower two-thirds its natural size.

PLANTING AND GOOD PLANTING.—Tree planting claims prominent attention in spring work. Whether a tree should be pruned or not when transplanted, depends, in a measure, on the health and vigor of the tree to be planted. A weak tree, or a tree with mossy bark, or one which in any way seems to have been somewhat neglected, requires more pruning than a tree showing a lusty and healthy growth. In fact, a tree which shows excellent vigor and appears to have been well cared for before transplanting, seldom needs much help from the pruning knife.

Then the question of good planting comes in. What many people imagine to be good planting is frequently very bad planting. If a tree leans over after a rain or wind storm, it is a proof that it was badly planted. If the soil had been packed in properly about the roots, it could not lean,—a tree only leans under these circumstances, from their being vacancies which the settling of the earth finds out. It is almost impossible to pack the earth in too firmly about the roots, at transplanting, and it should be done as the hole is being filled.

WATERING WINDOW PLANTS.—Care must be exercised when watering house plants not to overdo it. If this care is not taken the soil becomes sodden, the leaves turn yellow and begin to fall, and the plant becomes generally sickly. It is a great deal better to give too little water than to give too much,—merely enough to keep the soil moist is in most cases sufficient. It must be remembered that the soil naturally dries immediately on the surface much quicker than it does lower down in the pot, and is, therefore, very apt to be deceiving.

GRASS MIXTURES IN FARMING.—Mixed species of grasses for lawn making have been popular in gardening,—the theory being that when one kind finds itself not in its most suitable element, another will. It is on the plan of not having all the eggs in one basket. The John A. Salzer Seed Company of La Crosse have started a similar idea of mixed grasses, for regular agricultural hay crops.

CACTUS CUTTINGS.—Cuttings of cactuses are nearly sure to rot if planted like other cuttings just as they are taken from the parent plant. They should be laid aside for a week or two before planting so that the wound can dry. In many cases the cutting will root better by being placed on its side on the sandy earth, than upright in the ground.

YUCCA FILAMENTOSA.—Individual plants of "Adam's needle and thread" have often been illustrated, but its effect in a mass is beautifully shown by the illustration from the grounds of Mr. Jacob Manning, of Reading, Mass. The plant has a more than ordinary interest from the fact developed by Drs. Riley and Engelmann, that the plant has a special insect to fertilize it, and that the plant does not seed unless the insect does the pollenizing work.

TRAINING TO ODD FORMS.—In former times, a style of gardening prevailed by which trees or shrubs were trained or pruned into odd forms, such as of birds, beasts, or peculiar buildings. The revulsion has been so severe that these attempts are not made in modern times, and the only shearing that seems to be done now is to make evergreens appear like Christmas toys—still some work of this kind is not always out-of-place. Arch-ways, made of trees and shrubs, in front of doorways, are by no means objectionable. Trees and shrubs, naturally pendulous or trailing on the ground, may be grafted on tall stems so as to present a unique and pleasing appearance. The writer saw recently an odd method of training the *Hydrangea paniculata grandiflora*, without being able to decide whether it should be considered in good taste or not. A heavy cedar pole, some twenty feet in height, had been planted, and the hydrangea tied to this pole, until it reached the summit. This induced a somewhat drooping habit, and the appearance of this heavy stem, with the drooping head, on the pole, presented an appearance totally unlike any usually seen in gardens. It may be that when the plant becomes more aged, the effect would be more pleasing. At present the heavy pole seemed entirely out of proportion to the little weight of flowers borne at its summit.

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THE SAND CHERRY FOR FRUIT STOCKS.—The stronger growing varieties of the sand cherry are now being selected and used for dwarfing the cherry. The Mahaleb was supposed at one time to make the garden cherry dwarfer,—and indeed a cherry on the Mahaleb stock is usually of dwarfer growth than the cherry on the Mazzard stock; but the difference is not very remarkable, and the object in having cherries grafted on these separate stocks is not so much for dwarfing, as because the roots of the Mahaleb or the roots of the Mazzard are better adapted to different soils and conditions.

EDIBLE HAWTHORNS.—Mr. G. Newlin Williams says: "Nearly all of our edible fruits are of the rose family. The strawberry, cherry, raspberry, blackberry, plum, quince, pear, peach and apple are of the order rosaceæ. Besides these we have the currant, gooseberry and the grapes. Pomologists must have despaired of training and subduing the Cratægus, for hardly any wild fruit, which could be called fruit in a consumer's sense, has a more acrid, disagreeable taste than the Cock-spur Thorn, and, besides, the fruit seems to be, without exception, worm-riddled." But some specimens of the scarlet-fruited thorn, *C. coccinea*, produce good fruit, and are worth attention from the improver.

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INTENTIONAL SECOND EXPOSURE

PREPARING LARGE TREES FOR TRANSPLANTING.—Large trees that are to be moved next fall should be dug around before spring, in order to induce additional root growth. The method is to dig a trench around the tree about two feet or more from the butt,—the exact distance depending on the size of the tree,—undermine the tree without disturbing the ball of earth, cutting off all roots encountered. The trench should be dug to a depth of not less than two feet; carefully fill up the trench again, packing the earth firmly around the ball. The following fall it will be found that very many new roots had been formed that will make the transplanting of the tree quite successful.

A number of large Scarlet Oaks and American Beeches were treated in this way last winter, and the additional root growth made since that time was remarkable. At the same time the tree is dug around, the tops of the trees should also be pruned, though it is not necessary to cut the tree as severely as though transplanting was to take place immediately.

CHRYSANTHEMUMS.—The suckers from old plants of chrysanthemums are readily rooted in sand in the green-house or hot-bed during the late winter and early spring; use only the soft tips, and keep them well watered. They can be potted into small pots in good, rich soil as soon as rooted, and shifted from time to time as the roots fill the pot. Care must be taken that the plants do not become pot-bound. The best plants are those that are kept growing from the time they are rooted until they bloom. A check in the growing season is a severe blow from which they will not quickly recover.

For plants to be grown merely for cut flowers it is usual to take soft-wooded cuttings, early in summer, and grow them on, but not allowing them to make more than three or four shoots. By disbudding them during the summer, leaving only the strongest center bud, very large flowers can be secured.

FALLING OF INDIA RUBBER PLANT LEAVES.—Mrs. R. M., New York City, writes about the falling off of rubber plant leaves, in the house during winter. Though these leaves will remain longer on the plant under some circumstances than others, they cannot last longer green than two or three years. It is no sign of unhealthiness that the lower ones turn yellow occasionally, and fall. They will last longer however, when not stinted in food, as they often are when confined to small pots.

PRINOS VERTICILLATA. — The bright red berries of the *Prinos verticillata*, commonly known as the black alder, have been unusually attractive this winter, and in arranging planting plans for the coming season this plant should not be overlooked. While it thrives in dry soil, yet it delights in a low, boggy spot, which is really its natural element. There are male and female plants, and in planting one must be sure to use both, or the object for which the plants are set out will be defeated. It is believed that occasional plants are hermaphrodite.

DESTRUCTION OF INSECTS IN PLANT HOUSES.—Mr. H. Cannell, the well known nurseryman and seedsman, of England, writes that they have made a discovery in England by which insects in plant houses can be destroyed by peculiar smell or odor otherwise than by tobacco, which is so offensive to most people. He states that it will even destroy the mealy bug, causing it to drop lifeless on the floor, which tobacco will never do; but he gives no particulars as to what the substance is which is so employed.

THE SIPHON IN GARDENING.—In many cases cisterns and other bodies containing water could be very easily emptied or the water conveyed from place to place by siphons, where it is now conveyed by hand utensils. A common garden hose will do this as well as anything else. All that is necessary is to fill the hose entirely with water first before placing it in the cistern, and then to be certain that the outlet is lower than the source of supply.

MOISTURE IN CONSERVATORIES. — Many owners of conservatories cannot grow plants successfully, because they do not provide for sufficient moisture. Plants will not thrive in a hot dry atmosphere, and in order to secure more moisture, a can of water should be kept steaming over the radiator, and when watering the plants the heating pipes should be sprinkled as well.

PALMS FOR HOUSE CULTURE.—Replying to an inquiry by a correspondent as to whether *Latania borbonica* (*Livistonia chinensis*) or *Livistonia rotundifolia* is best suited for house culture, Mr. Edwin Lonsdale, Chestnut Hill, Philadelphia, one of the most successful growers of palms, and one of the first to commend their growth for commercial purposes, on a large scale, writes:—

"So far as I know the latter has not had a very extensive trial for house culture, as it has been rare until the last few years, and somewhat high in price compared to the old *Latania borbonica*. Until given a more extended trial, I should pin my faith to the older species. One advantage which the *L. rotundifolia* possesses for room decoration over the *L. chinensis* is, that it is of a much more compact form of growth. It also requires a higher temperature to keep it growing and in good condition than *chinensis*."

NEW OR RARE PLANTS.

A PLAITED FERN.—One of our correspondents, Mr. Jonathan Jones, has a fern from Japan. The stoloniferous roots have been woven into a close lattice or basket work. It is deservingly considered a remarkable combination of nature and art. By the description, the fern appears to be *Nephrolepis bulbifera*, a very common fern used for growing in baskets, and which sends out numerous long, thread-like stolons bearing bulblets from which new plants may be produced.

SCARLET BRACTED EUPHORBIA.—The bright scarlet bracts of *Poinsetta pulcherrima*—now regarded as *Euphorbia pulcherrima* by "Index Kewensis," are well known in greenhouse or window gardening. There is an American species which has some scarlet on the bracts, *Euphorbia heterophylla*. By selecting seedlings that have a special tendency to the scarlet bracts, Mr. A. W. Smith, of Americus, Ga., says, American florists have secured a race quite as handsome as its Mexican prototype.

STYLOPHORUM DIPHYLLUM. — Mrs. Susan Tucker, Spokane, Washington, has the following interesting note regarding this plant. The conductors have taken the liberty to change the title from *Meconopsis diphylla* to *Stylophorum diphyllum*, in correspondence with "Index Kewensis." She says, the common name in her locality is "Wild Perennial Poppy." She adds: "The botanists say, 'leaves glaucous beneath, segments 5–7, ovate-oblong, sinnate, cauline leaves opposite; peduncles aggregated, terminal; capsule four-valved, echinate-setous; woods, Western States; plant 12 to 18 inches high; leaves large, 8 x 6 inches, on petioles about the same length; terminal segment somewhat confluent; pedicels about 3 inches long; petals deep yellow (just the color of *Hemerocallis flava*), orbicular, 1 inch diameter; May. This plant is one of the very first to appear in the spring, blooms soon, very full, and continues to throw up bloom stalks throughout the entire summer. It loves a cool, half shady place, and a clump is seldom without flowers; leaves exceedingly pretty, and remain fresh until after being repeatedly frozen in fall.'

"I lifted a small clump in fall of 1892, and potted with my hyacinths and spiræas to force. When brought up to the light, they were the first to start, and almost as if by magic, were a mass of green; buds soon appeared and turned yellow when but two or three inches above the earth. I thought them blighted, but they soon opened all right, the color only showed through the calyx; bloom closed at night, and opened for five days in succession, with five flowers to each stalk. By two or three weeks it was a blaze of bloom, and when I tried to count the stalks they were so numerous that I failed, but thought there were about thirty. It continued until those out doors were in full flower, full as at first, when I turned it out. I have wished since I had kept correct data until it ceased flowering."

ACONITUM AUTUMNALE. — Under this head Mrs. Seliger has a good word to say for the autumn-flowering monkshood:

"This is one of the first-rate herbaceous perennials that flower at this late season. It grows to a height of some three feet, is well furnished with glossy foliage, and bears at the summit branching spikes of very dark blue flowers which last a long time. It is worth noting that since this plant blooms at the same time with the white Japanese anemone, a very

pleasing combination can be made of the two. *Aconitum autumnale*, the name under which it is generally known, is easily multiplied by dividing the roots. Those who have tried sowing the seed as soon as it ripens on plants grown here, have found that it germinates much more surely and quickly than imported seed."

It may be noted that there are two kinds which have been described under the name of *Aconitum autumnale*,—one of which is really *Aconitum Fischeri* of Alaska,—the other a late flowering variety of the European *A. napellus*. Possibly the one referred to is the latter.

NEW JAPAN BIRCHES.—Mr. Lemoine, a well known French nurseryman, has two Japan birches, which he thus describes :—

"*Betula alba Japonica*. A Japanese variety of the common birch, with greenish-bronze stems, studded over with whitish specks or knubbles, which make it quite rough to the touch, especially in the young state; the petioles are rosy-red, and also lenticillate, and the leaves twice as large as those of *B. alba*, are heart-shaped at the base, and ending in a point, deeply indented and waved at the edges, and in color dark, dull green. This tree grows in the island of Yezo, and is very rare."

"*Betula Maximowiczii*. In Yezo, Japan, this tree grows to a height of over 80 feet (25 mètres), and measures over 3 feet (1 mètre) across the base of the stem. The bark, smooth to the touch, bronzy-orange in color, thickening at the base of old trees, peeling off in long narrow scales, and turning to an ashen-grey color, the leaves widely oval, cordate at the base, toothed, thin, and almost membranous, are bright dark green above, and yellowish-green below, larger than those of any other birch, sometimes measuring as much as 5¾ inches (15 centimètres) long."

THE HARDY FLOWER GARDEN.

ASTERS AND GOLDEN-RODS IN GARDENS.—To the popular mind an aster is an aster, and a goldenrod a goldenrod, and it is often surprised when beginning to understand that there are numerous species and varieties of both, in habit and general appearance. They are so indistinct that one with little botanical knowledge would fail to distinguish them. As garden ornaments for the fall of the year, nothing can exceed them. The asters go by the name of "Michaelmas daisies," in the Old World.

SWEET PEAS FOR EARLY SPRING FLOWERING.—By planting seeds of the sweet pea in pots in the green-house or windows, not allowing them to become pot-bound, and transplanting them out of doors as early in the spring as possible, bloom will be secured a great deal earlier than when the seed is sown right out of doors. The sweet pea does not require much heat,—in fact a degree or two of frost will only temporarily check its growth. One of the best varieties for early flowering is the Blanche Ferry, a pink and white sort, and very floriferous.

SPECIAL CULTURE FOR SAND-LOVING PLANTS.—Many beautiful flowers grow in what are known as "pine barrens," or in localities where the soil is stony or otherwise of a light or porous character, and which it is very desirable to cultivate in gardens where the soil is heavy and stiff. This can easily be accomplished by making a wooden frame—as one might say, "a box without a bottom,"—setting it on the ground and partially filling it with light, sandy, porous soil. The plants can be set in the ordinary garden soil, and the sand or light material filled in around the plant. In this way the main roots will get a hold in the natural earth without drying out in summer time; while the small, fibrous roots will grow luxuriantly in the open, porous soil filled into the little wooden frame. The common trailing arbutus, the partridge berry, the little pyxidanthera, and numberless other plants of this character, which people frequently require, can be transplanted successfully in the gardens and thrive well under this treatment. Again such frames are useful in the cultivation of shade-loving plants, as something to give shade can be supported over them during the hot season.

DOUBLE PÆONIES.—Probably one of the most satisfactory of all the classes of herbaceous plants is the pæony. If plants are utterly neglected they still grow and bloom, while if well treated they reward the flower-lover more abundantly than any other kind of flower. In former years nothing but double

ones were cared for, but in more recent times single flowered ones have been given attention, and many are quite as beautiful, in some respects, as the doubles. After all this, the double forms will always have admirers. The raising of new varieties from seeds is a source of pleasure. The method of obtaining "doubles" from the "singles" is very simple. The "doubles" usually have perfect pistils, but the stamens having been turned into petals, produce no seed; but if the pollen of the single varieties are placed on the pistil of the double ones, the seeding is perfect,—and a seedling from this mostly produces double varieties. Some single varieties flower much earlier than the double ones, and have passed away before the double ones open; but a scientific fact has been developed of late years which ought to be of great use to the practical raiser of new varieties of pæonies, namely, that pollen will keep its vital power for an indefinite time, if kept perfectly dry. Some pollen has been saved for two years, and yet found potent, when applied for fertilizing purposes.

DAHLIA CUTTINGS.—Varieties of dahlias, the stock of which it is desired to increase, should be potted and put in the green house early in spring. When the young growth is made, cuttings can be taken of them the same as geraniums and similar plants. If kept growing and potted, these cuttings will make plants of fairly large size by the time they are ready to plant out of doors, and will bloom the same year.

ANNUALS FOR THE GARDEN.—Seeds of annuals should be planted in pots in advance of spring, and the seedlings pricked off into boxes or pots as soon as they are large enough to handle. They can be grown in a cool part of the greenhouse, in hot-beds or even in rooms. There are a great many pretty annuals that can be utilized to brighten the garden next summer, and from a large list the following can be especially recommended,—they are all familiar sorts to nearly every one: German aster, balsam, portulaca, single chrysanthemum, morning glory, candy tuft, amaranth, cosmos, nasturtium, mignonette, cockscomb, marigold and stocks.

FRUITS AND VEGETABLES.

FRUIT TREES IN POTS.—Many persons suppose that there is little gained in the artificial cultivation of fruits, because, as a general thing, most kinds can be readily left to nature in the favored climates of most parts of America; but besides the mere desire to get something to eat, there is a great pleasure attached to the artificial culture of fruits,—quite as much so, in fact, as in the cultivation of flowers for their beauty alone; and in many cases, one can have the fruits so raised at a comparatively low cost, and at seasons of the year when it is almost impossible to have the natural fruit. This is particularly true of the apricot. In the earlier part of the century it was just as easy to have apricots from trees growing in the open air, as apples or peaches; but the increasing abundance of the plum wevil or curculio, has driven the apricot completely out of cultivation in the Atlantic states. Yet apricot trees can be grown to perfection in comparatively small pots, and in this condition will yield an abundance of fruit, and the fruit itself being quite as beautiful as the flowers of many plants. We give with this an illustration, from the London *Journal of Horticulture*, showing how productive apricot trees may be under these conditions; and it is not because they cannot be grown in the open air in England that the

APRICOTS GROWN IN POTS.

fruits have been raised in this way, for the apricot is very productive in that country when trained on walls or fences, having an eastern or southern aspect. It is simply found to be a matter of profit and pleasure to grow them in this way.

THE BOURGEAT QUINCE.—Mr. F. E. Young, of Rochester, N. Y., calls attention to this new quince as being one of the healthiest known. The leaves are nearly double the size of those from other quinces, very thick and leathery on full grown trees. Another correspondent inquires whether it is a fact that some varieties of fruit trees are more susceptible of disease than others, and this question may be answered in connection with the point raised by Mr. Young. It it undoubtedly true that some of the minute funguses do prefer one variety to another. This is a well known fact in connection with the old Butter Pear. Minute funguses have fastened themselves to this species and seem to pursue this variety wherever it goes in America; and yet a variety like the Bartlett, grafted on a diseased Butter Pear tree, remains in perfect health. Although no one can say as yet that this variety of quince is constitutionally able to resist the disease which sometimes attacks the quince, yet analogy would show that a fungus-resisting quince is within the bonds of probability.

EARLY TOMATOES.—Tomato seeds sown in boxes, in the green-house or window, and the young plants shifted into pots from time to time as they seem to require it, will make strong, vigorous plants by the time the season arrives for planting them in the garden, and will fruit much earlier than those started later. The Champion gave exceptionally good results last season, the fruit being of extra large size and very heavy. The flesh was solid and contained remarkably few seeds. It is a strong grower in good soil.

APPLE BARK-SCALE.—Mr. C. L. Longsdorf, of Floradale, sends specimens of apple wood covered with one of the species of apple bark-scale, and inquires for a remedy. A number of years ago the writer of this paragraph, whose orchard was badly infested, so much so, indeed, that the trees appeared to have been white-washed, had them painted with thin linseed-oil,—the smaller branches that were infested being cut off and burned. It was thoroughly effective,—not a scale having appeared to this day. Others who tried the remedy complained that the bark was injured by the application; but this probably arose from using linseed oil that had been adulterated with mineral oil. There can be no doubt but what pure linseed oil, the real vegetable article, while in no way injurious is a certain remedy against the bark-scale.

RENEWING THE FERTILITY OF VEGETABLE GARDENS.—In the vegetable garden, deep soil is of great importance, and for vegetables valued for their leaves and succulent roots, the soil can scarcely be too rich, and yet after a few years of heavy manuring, it is a frequent experience that the garden becomes unproductive. This is usually from the exhaustion of the mineral constituents,—a form of fertilizer which the stable manure does not supply. In this case, lime, wood-ashes or some other similar fertilizer is of great value where the vegetable garden is worked by a plow rather than the spade. Sub-soil plowing is of immense value. This does not mean that the heavy sub-soil devoid of all vegetable remains should be brought to the surface. This is not good gardening; but the plow which simply loosens the sub-soil, should follow in the same furrow made by the surface plow. There is no better way to double the surface area of a piece of ground than to loosen up the sub-soil.

VEGETABLES UNDER GLASS.—The growth of vegetables under glass, which for a time it was thought could not be remunerative under southern competition, is now found to be profitable, and its growth in every direction is a general topic of interest. In the west as well as in the east, winter culture is extending. Mr. F. Bush, of Richfield, Minnesota, has a house 200 feet long by 28 feet wide, wholly devoted to cucumbers and tomatoes. The *Market Garden* of Minneapolis has recently given a full account of it.

FEEDING APPLES TO THE MOTHER COUNTRY.—The English must be enormous apple eaters. Secretary Morton says that we sent to Great Britain, between January and September, 1894, apples for which they paid us $2,500,000.

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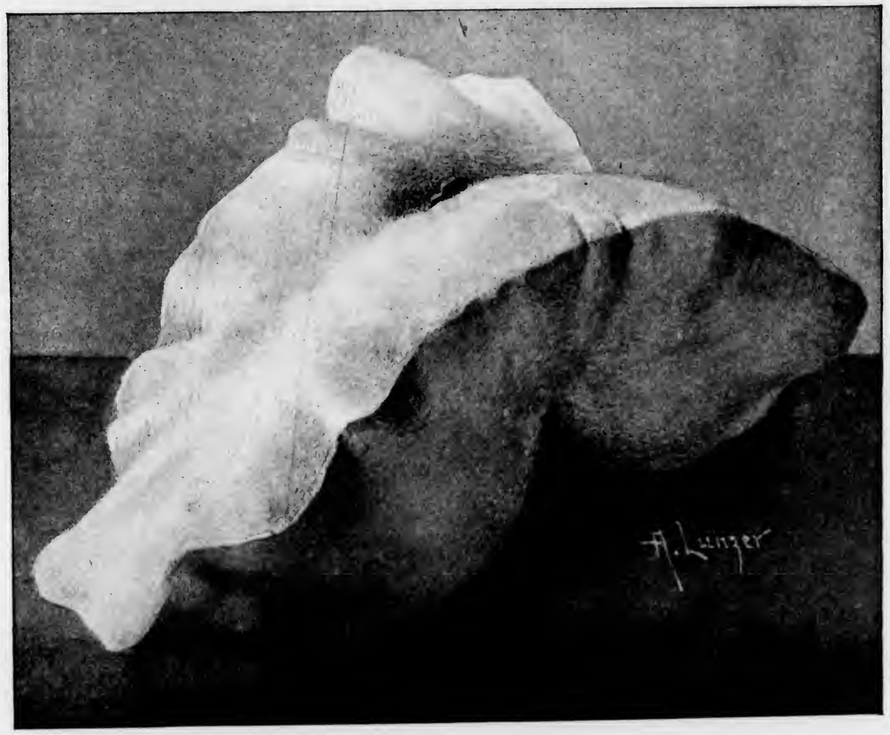
The common Japan yam has bulblets as large as coffee berries.



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EARLY POTATOES.—Some varieties of potato mature earlier than others; but it is said that this earliness may be enhanced by putting a lot of potatoes into a shallow box, with earth, and letting them sprout,—setting out the sprouts as in the case of the sweet potato. Some, however, assert that the check by transplanting allows the regular potato set to nearly catch up with the sprout. Care must be taken to prevent wilting.

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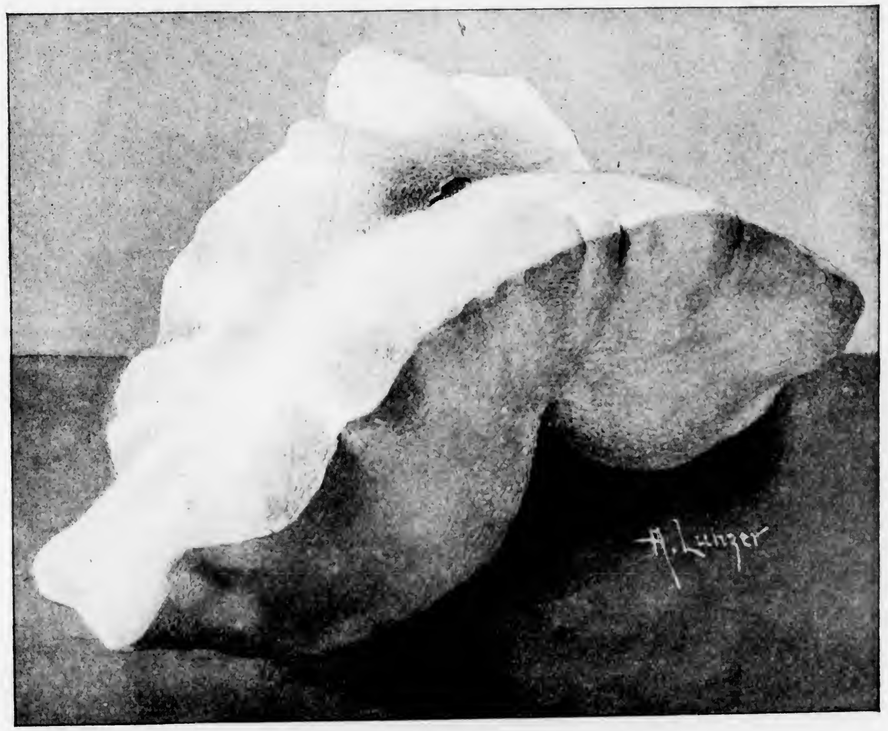

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INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

SHARING HAPPINESS.

I think the bees, the blessed bees,
  Are better, wiser far than we,
The very wild birds in the trees
  Are wiser, far, it seems to me;
For love and light and sun and air
Are theirs, and not a bit of care.

What bird makes claim to all God's trees?
  What bee makes claim to all God's flowers?
Behold their perfect harmonies,
  Their common board, the common hours!
Say, why should man be less than these,
The happy birds, the hoarding bees?

—JOAQUIN MILLER.

DR. ROBERT H. LAMBORN.—One of the best patrons of intelligent American gardening, Dr. Robert H. Lamborn, died suddenly of heart failure in New York on the 17th of January, in his 59th year. The readers of MEEHANS' MONTHLY will recall the account he gave in our last volume of a visit to the grounds of Mr. Ephraim Bull, the originator of the Concord grape, and the suggestion made by him that a national benefactor of this class deserved as much honor as military or civil benefactors often received. He was a man of remarkable sympathy with every move for the advancement of human intelligence and happiness,—and his good works in connection with museums, public libraries, public grounds and parks will live long after him. At the time of his death he was studying some method by which the difficulties surrounding the naming of plants in public grounds might be overcome. He was born on a family estate near Kennett Square, Chester County, Pennsylvania.

PROFESSOR EDWARD L. GREENE.—It is announced that this distinguished botanist, favorably known by his labors among the wild flowers of Colorado, and more recently in connection with the Flora of the Pacific Coast, will resign his position in the University of California, in order to take the chair of botany in the great Catholic University at Washington. For a long time this institution was devoted to mere collegiate work in connection with educating the young men for the ministry; but it has been decided to advance it to an institution of learning, in which all the higher branches of scholarship will receive recognition. Although the removal of this well known botanist from the Pacific shores to eastern fields of usefulness will be welcomed by his co-laborers in science in that section, the Professor does not intend to lessen his interest in the botany of the Pacific coast, in which there is still so much to be developed in connection with the advancement of botanical science.

THE SEX OF FLOWERS.—Why some flowers should be wholly staminate and others wholly pistilate, has long attracted the attention of biologists. It is in some way or another connected with nutrition. Any one may note on the spruce tree that the cones are always connected with the stronger and most vigorous branches, while the male flowers are almost always in association with the weaker ones. There is still very much to learn in connection with the subject, and the matter is being gone over again by Mr. G. Harold Powell, of Ithaca, N. Y. In view of the many facts relating to this question that have been placed on record during the last quarter of a century, and since the above noted discoveries were made, very interesting results ought to follow Mr. Powell's labors.

SARGENT'S SILVA OF NORTH AMERICA.—Few works are of more lasting value and do greater credit to our country than Professor Sargent's *Silva of North America*,—no greater work has ever been issued in any country. We are pleased to say that the National Agricultural Society of France has given to Professor Sargent a gold medal as their appreciative testimony of this grand work. It comes with a good grace from this French society, considering that one of the grandest works before the present one on American trees was by a Frenchman, namely, Michaux.

SALE OF WIMPOLE HALL—A CELEBRATED ENGLISH GARDENING ESTABLISHMENT.—"Which do you like best,—this place, or Wimpole Hall?" said the writer of this, once, some fifty years ago, to a bright young lad, now Earl of Hardwicke. "This is pleasant," was the reply, "but this place is my mother's, and it is natural I would feel interested in Wimpole Hall, which will be my own some day." It is sad to learn from recent English papers, that on account of millions of debt and interest, the place has "gone under the hammer." It was one of the most famous of English gardens, comprising some 8,000 acres, and at the end of the last century was under the charge of a famous gardener-botanist James Donn, who finally became curator of the Botanic Garden, at Cambridge, more famous for its collection of plants at that time than Kew. Donn wrote the *Hortus Cantabrigensis*, the earliest of garden dictionaries, and which was so popular as to go through twelve editions, two of which were edited by our own Frederick Pursh. Donn's services to garden botany have not been well recognized, through a similarity of name to the famous Scottish botanists, David and George Don, who overshadowed him. The Hardwicke family always seemed proud of Donn's reputation in connection with their estates and many anecdotes were told about his devotion to science. One was in connection with his marriage day. He had engaged to go with his bride-elect at a certain hour. He had taken a short trip in the morning to a neighboring swamp, where he found for the first time a species of sun-dew, *Drosera longifolia*. Not returning in time, a messenger was sent in the direction he had taken. He was found scratching among swamp moss, looking for more sun-dews, oblivious of how rapidly the time had departed. The writer may be pardoned for sympathizing with the Earl's misfortunes, in view of the goodness of the Earl's father in offering "to pension off old Legg," (the successor of Donn), and place him in charge,—and which only for the allurements of Robert Buist, of Philadelphia, "might have been."

THE HISTORY OF THE WEEPING WILLOW.—A correspondent sends us the following extract from the *Christian at Work*:

"Relating to this subject of the Bible flora, that is an interesting article which Mr. J. A. Erskine Stewart contributes to an English periodical on the willow of Scripture. He identifies the Hebrew Oreb or Oribin with the *Salix Babylonica*, or the weeping willow. This plant was introduced into England at Twickenham by the poet Pope, who observed that a basket containing figs which he had received from Turkey was budding. He planted the twig, which soon became a fine tree, from which stock many of the weeping willows of this country have sprung. We find it in Scripture associated with joy and sorrow. The Israelites are enjoined at the Feast of Tabernacles to use boughs of willows of the brook and to rejoice before the Lord seven days. When the Jews were captives in Babylon, they hanged their harps on the willow trees, and refused to accompany any Hebrew melodies on the harp, or sing for Nebuchadnezzar or Belteshazzar. They might have sung a little for Cyrus, though."

This story has been contradicted over and over again. There were no willows growing in the neighborhood of Babylon,—nothing but poplars,—no baskets were ever made of the weeping willow, for the branches snap like glass and could not be worked into baskets. If the weeping willow had been a native of Syria it would have been known in England long, long ago, before Pope's time. Moreover, it has been shown conclusively that Pope's willow came from an original tree in Hampton Court, and that the Hampton Court willow was made a present to Royalty from Holland. The weeping willow is a native of China. No one but the Dutch were allowed to trade with China for many years, and although the exact individual who introduced the weeping willow to Holland has not been known, it is clear that to Holland we owe the introduction of the weeping willow. Though this story has been refuted over and over again, it will probably continue to be a part of "veritable" history for all time.

JAMES H. VEITCH.—Among the distinguished English horticulturists of the Old World America may expect a visit from shortly, will be Mr. James H. Veitch, of the famous firm of James Veitch & Sons. The firm has been eminent in spreading a knowledge of evergreens among our English friends. America's deciduous trees will present a newer topic of interest.

GENERAL NOTES.

CARE OF CITY TREES.—The street trees of Wilmington, Del., are hereafter to be cared for at the expense of the city.

GOOD CARNATIONS.—Mr. Kift tells the *American Florist* that the most popular carnations about Philadelphia are Daybreak, Portia, Lizzie McGowan, Sweet Briar, Buttercup, Golden Gate, Wilder, Thomas Cartledge and Mrs. Fisher.

PROGRESS OF ORNAMENTAL GARDENING.—It is gratifying to know that the taste for ornamental gardening is growing rapidly. In order to accommodate their growing business, the well-known firm of greenhouse architects and builders, the Lord & Burnham Co., will open an office at 160 Fifth Avenue, New York, as being more convenient for furnishing preliminary plans and estimates of garden work.

THE EXTIRPATION OF THE RUSSIAN THISTLE.—Some comment has been made on the fact that Secretary of Agriculture Morton opposed the appropriation of a million of dollars to various states "to be applied in connection with such other sum as the said states may raise" for the extirpation of the *Salsola Tragus*. But the Secretary is right. As a practical man he knows that legislation against weeds has always proved a farcical failure, and in the nature of the case always will.

SENTIMENT IN FLOWERS.—Andrew G. Curtin. the great war governor of Pennsylvania, once said in the hearing of some friends, that he only cared to have some one place red flowers on his grave. General Owen Jones of Philadelphia, journeyed from Philadelphia to Bellefonte, and placed red carnations over the burial place of his departed friend. The same underlying thought originated the strewing of flowers over the dead on Memorial Day. And yet there are occasionally some who carp. A recent notice of the Count of Paris, spoke of his "theatrical action" in gathering a white rose from the grave of General McClellan at Trenton, and placing it under his vest over his heart. "No one but a Frenchman, could have done this." Those who knew the Count personally, well understood there was nothing theatrical about his "sentiment." He once stated to the writer that he never realized so much the peacefulness of nature in comparison with the angry passions of man, than when he saw the pure white flowers of the dogwood be-spattered with human blood at the battle of Williamsburg. How few would make such a note at such a fearful moment, but it shows how deep and how natural was manly sentiment planted in his breast.

THE COST OF COMMISSIONS.—Mr. W. Boecklin says; "I read with approval your remarks when speaking of weeds in reference to Government Commissioners. These officials whether running after Russian thistles or inspecting our markets are nuisances." Professor Rothrock has recently observed notwithstanding all the laws against setting fire carelessly to brush in forests they have all become dead letters. It is indeed difficult to recall any case where the employment of government officials has been worth the expenditure in matters connected with forestry or agricultural matters. It is not contended that no good at all has resulted; but simply that the work has not been worth the cost.

GOVERNMENT SEEDS.—Secretary Morton is doing good service by discouraging the free distribution of garden seeds by the government. The best of all reasons is that there is no more reason why seeds should be sent away by the thousands of dollars worth, than that it should give away pen knives or scrubbing brushes. Indeed, it would be more sensible to send these useful things, for not one package of seeds in a hundred is ever sown. The distribution is simply a fad of Congressmen to keep themselves in the memory of the electors. Good work is the best road to popularity.

ASTER SPECTABILIS.

SHOWY ASTER.

NATURAL ORDER, COMPOSITÆ.

ASTER SPECTABILIS, AITON.—Stem corymbose and glandular-pubescent above; leaves oblong, lanceolate, rough on the upper surface, sessile and entire; the lowest tapering into a petiole, and sparingly serrate; heads not numerous, single, terminating the branches; involucre hemispherical, as long as the disk; the scales linear oblong, with obtuse and spreading glandular tips. (Chapman's *Flora of the Southern United States*. See also Gray's *Manual of the Botany of the Northern United States*, and Wood's *Class-Book of Botany*.)

The large and beautiful class of asters or star-flowers enters extensively into popular literature. Although there are about two hundred species now known, and most of these we should have to consider among the wild flowers of the United States, they are generally known in connection with way-sides or public way-places, or, perchance, as part of the beautiful autumn scenery that makes our country so lovely. The poet is almost sure to see them in his woodland walks, or to make use of them in painting some pretty piece of river-bank scenery. References to the star-flower in American poetical works are very numerous, as we might expect from a class of plants at once so showy, so varied in species, and so abundant everywhere. We recall, as we write, the sweet lines of Bryant in his "Burial of Love," wherein the star-flower has an important part in the description of the spot where the love-child was laid.

> "Close softly, fondly, while ye weep,
> His eyes, that death may seem like sleep,
> And fold his hands, in sign of rest,
> His waxen hands, across his breast.
>
> And make his grave where violets hide,
> Where star-flowers strew the rivulet's side,
> And blue-birds in the misty spring
> Of cloudless skies and summer sing."

Our present species, though so beautiful as to merit well its specific name—*spectabilis*,—being Latin for "showy," can scarcely be recognized among the many references to the star-flower in polite literature. It is not very widely disseminated through our territory, being confined chiefly to the sea-coast States, from Massachusetts to the Pine Barrens of Florida. It is rather abundant in New Jersey, which may, perhaps, be regarded as its central home. We cannot find that it has anywhere crossed the Alleghenies, and if it has, it is probably very rare. Pursh, who, in his "Flora of North America," issued in 1814, is probably the first American author to refer to it, says he found it growing in "low meadows on the sides of woods, from Pennsylvania to Virginia."—but the general experience will probably be, that it grows freely in open and dry sandy places.

But, though few references are made to the plant by collectors, or by popular writers, it deserves notice in a popular work, as being among the nearest to the European form, which has found a place in ancient history, being referred to by Dioscorides, Virgil and Pliny,—*Aster Amellus*. Virgil, in praising country life, is describing the pleasure that follows from watching the habits of bees, and he speaks of a "meadow flower whose name is *Amellus*," as among those popular with these industrious little workers, and which plant has been identified as really the one now bearing this name. *Aster*, the Grecian name for star, though, according to some authors, supposed to be applied to the plant from the ray florets giving to the plant some resemblance to a star, is by some supposed to have reference to Aster, a celebrated character in ancient Grecian history. He was an adept in archery in the time of Philip of Macedon. During the siege of Amphipolis, by Philip, his aim at the king was so true, that his arrow struck and destroyed one of the eyes of the king, and, for which, when the town was taken, Aster was hung.

Our species resembles the ancient aster in the size and color of the flowers,—and also in having few flowers on each stalk; but it is a much taller plant, and, so far as we can judge from the specimens growing in their native

ASTER SPECTABILIS.

SHOWY ASTER.

NATURAL ORDER, COMPOSITÆ.

ASTER SPECTABILIS, AITON.—Stem corymbose and glandular-pubescent above; leaves oblong, lanceolate, rough on the upper surface, sessile and entire; the lowest tapering into a petiole, and sparingly serrate; heads not numerous, single, terminating the branches; involucre hemispherical, as long as the disk; the scales linear oblong, with obtuse and spreading glandular tips. (Chapman's *Flora of the Southern United States*. See also Gray's *Manual of the Botany of the Northern United States*, and Wood's *Class-Book of Botany*.)

The large and beautiful class of asters or star-flowers enters extensively into popular literature. Although there are about two hundred species now known, and most of these we should have to consider among the wild flowers of the United States, they are generally known in connection with way-sides or public way-places, or, perchance, as part of the beautiful autumn scenery that makes our country so lovely. The poet is almost sure to see them in his woodland walks, or to make use of them in painting some pretty piece of river-bank scenery. References to the star-flower in American poetical works are very numerous, as we might expect from a class of plants at once so showy, so varied in species, and so abundant everywhere. We recall, as we write, the sweet lines of Bryant in his "Burial of Love," wherein the star-flower has an important part in the description of the spot where the love-child was laid.

"Close softly, fondly, while ye weep,
His eyes, that death may seem like sleep,
And fold his hands, in sign of rest,
His waxen hands, across his breast.

And make his grave where violets hide,
Where star-flowers strew the rivulet's side,
And blue-birds in the misty spring
Of cloudless skies and summer sing."

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INTENTIONAL SECOND EXPOSURE

condition, is not inclined to be so stocky. It might improve in this respect, under cultivation; but it does not appear anywhere as a garden flower, though it was introduced to English gardens, according to Aiton, in 1777, by Dr William Pitcairn. It is, however, not referred to in any recent work on garden plants.

Mr. Robinson's "Hardy Flowers in English Gardens" makes no mention of it; and it is nowhere cultivated in American gardens, though it well deserves to be.

In the Old World, where facts are drawn from local areas, floral calendars have been so nicely constructed that certain flowers are expected to have their first openings on regular fixed days. The twenty-ninth of September has been fixed for the great birthday festival of the Aster. But a floral calendar in America, with its vast range of floral distribution for any single species, would not be dependable. As already noted Asters generally are fall bloomers. In New Jersey we should look for *Aster spectabilis* in the early part of September,—rather earlier than some of its brethren. But as we get south the season is later, as if it were waiting for the cool weather to come. Some specimens from Florida beautifully in bloom early in March, suggested the selection of the plate for this issue.

The botanical history of *Aster spectabilis* is comparatively modern. It seems to have been unknown to our earlier authors—even Michaux, in the early part of the present century, making no mention of it. It was named by Aiton in his account of plants growing in the royal gardens at Kew, and, as we have already seen, referred to under Aiton's name, by Pursh, in 1814. It seems to have been noted by Elliott, in 1816, but confused with *Aster surculosus*,—but Nuttall, in 1818, pointed out the differences. He says, "the viscidly pubescent calyx (involucre) and peduncle, with the numerous flowers, and the approximating equality of the leaves, distinguish this species readily from *A. surculosus;* while the hemispherical calyx, and numerous rays (more than 20), likewise separate it from the variety *bellidifolius*. The stem is never pilose as well as glandular above." It may, however, be remarked that modern botanists do not regard the variety *bellidifolius* as worthy of being kept separate, and hence we read in the description taken from Chapman, that "glandular-pubescent" is part of the character of the species. Even the hemispherical involucre is not a very constant character. We see in our illustration, that on the same plant there is a variation from hemispherical to ovoid, according to the stage of development of the flower.

The whole tribe of *Aster* is a somewhat difficult one to study from the point of classification, but these difficulties, to the systematist, render them the more acceptable to those who love to study the unities of nature. There is good ground for believing that forms now distinct are descended from other forms once closely related, and that the distinction often comes about from the disappearance of the intermediate forms which once connected them. Therefore, those genera like *Aster*, which have in these our times a great diversity of form, and yet, these innumerable and wonderfully distinct forms so closely related that the student can scarcely tell where one species begins or the other ends, are invested with special interest, for in modern botany mere classification is by no means the chief feature of interest.

So far as *Aster* itself is concerned, their study is much simplified by dividing them into artificial sections, though with a certain degree of natural resemblance. For instance, the group of *Asters* to which *Aster spectabilis* belongs, has most of its members with large flowers, and hence Dr. Gray gives the section the sub-name of *Calliastrum*—or "the beautiful aster." In addition to this the section has the green involucral scales under the flower, leathery, and with small green, and (in our species) spreading tips. Then the achene is narrower than in some other asters, and the pappus formed of rigid bristles of unequal thickness. Besides this, though not noted by Dr. Gray, the corolla-tubes of the disk flowers are also slender, and there are some other characters, which, when taken together with the showy flowers, would bring a plant, supposed our species, down to some half a dozen, from which finally to decide.

By such minute care the study of asters will be found to be very pleasant,—quite as much so as many other genera, and more profitable.

EXPLANATION OF THE PLATE.—1. Top of a flower stem sent by W. F. Bassett, of Hammonton, N. J. 2. Disk flower just overblown, showing achene, pappus and corolla.

WILD FLOWERS AND NATURE.

A WORK OF LOVE.

While the water cresses slumber,
While the birds are few in number,
Spring is busy at her loom
Weaving for the time of bloom:
For the trees, a bright green awning,
For the time of vernal dawning;
With a warp of living green,
With a weft of flowery sheen,
Bright the wreaths to deck her pillow—
Hanging from the oak and willow—
Soon her robes of living green
In their beauty will be seen.
Watch the swiftness of her fingers
Weaving, where the sunlight lingers
In the mossy meadow nook
By the gently purling brook.
Soon we'll see the sweet unveiling
Of the pink arbutus trailing;
Then the snowdrop will peep up
And the yellow buttercup—
When the days are soft and hazy—
Smile beside the nodding daisy,
And her shuttle she will ply
'Neath a sunny, azure sky,
'Till her weft and warp she closes
With the blooming of the roses.

J. W. WILSON, in *Boston Globe*.

VITALITY OF SEEDS.—Mr. Wm. F. Bassett, of Hammonton, N. J., says, "In the January number, you intimate that seeds may retain their vitality for an indefinite length of time, when buried in the earth, so as to exclude air. Without any careful experiments to test the matter, it has yet appeared to me that seeds do not retain ther vitality nearly as long here as they did in Massachusetts, and I have thought that our comparatively hot and dry climate caused the difference. With only a 'theoretical view,' it would seem that enclosing them in close, metallic cases, should hold them longer, and with this idea, I have been putting seeds, when carefully dried, in old cocoa cans, and storing them on shelves in a dry, cool cellar. Have you ever had any experience in this line, and if so with what result, and if not, what do you think of it theoretically?"

It is to be regretted that important questions such as this one, are not made the subject of direct experiment. It would be useful work for experiment stations. Nearly all that is known has been derived from accident on the casual observation of some chance observer. The writer of this paragraph, accustomed to demand proof such as was required by a celebrated "Thomas" of old, before conceding a point, was not for many years satisfied with the accounts of seeds retaining vitality in the earth for an indefinite time, under certain conditions. In the statement of the recorded facts there always seemed a possibility of circumstances escaping the eye of the observer. But finally the fact seemed incontestable that, deep in the earth, seeds will retain vital power long after they would have lost it near the surface. The exact manner in which this is accomplished is not clear. It may be that a certain low temperature is of itself sufficient to prevent chemical change, or it may be that the bacterial germs which induce rot or decay, are not present, or have no chance to develop. Careful experiment might answer these questions. One might hazard a hypothesis, but it is impossible to formulate any theory, at least so it seems to MEEHANS' MONTHLY.

NORTHERN RANGE OF THE SHEPHERDIA AND OTHER PLANTS.—Observing the note on page 12, of the January number of the MONTHLY, I write to tell you that Shepherdia is found growing wild very much farther north than Denver. I saw it growing plentifully on the Rocky Mountains last summer, over 150 miles north of the most northern boundary of the United States, (except Alaska). The pistillate plants were heavily loaded with red, and not seldom *yellow* berries. I had not before known that the berries were ever yellow. 300 miles (3000 feet altitude) north of our northern boundary, I found abundance of fine strawberries, wild salal berries (Gaultheria Shallon), red and black raspberries, Juneberries,—there called "Saskatoons"—wild black currants, red currants and blue spicy currants, wild bird cherries, hazel-nuts, some kind of Arctic dewberry, a lily,—probably a variety of *Philadelphicum*, true lilies by the hundred acres, etc. LUTHER BURBANK, Santa Rosa, Cal.

THE PRIMITIVE CORN.—Mrs. W. A. Kellerman offers the following interesting speculation on the origin of Indian corn:

"In MEEHANS' MONTHLY, January, 1892, there was a note concerning the primitive corn —with an illustration. There was also an article published last year relative to the development of the ear. In both articles we find practically the same thought, viz.: 'If we draw the branchlets of the 'tassel' upwardly with the hand we shall see exactly the resemblance to an eight-rowed ear of corn. No one can fail to see that the ear of corn is nothing more than the tassel which has had power to unite its branchlets and become succulent.'

"I have taken great interest for several years in studying the development of Indian corn, and it seems to me that the many abnormal specimens which may be considered reversions, point to a somewhat different method of development of the ear. To tell the whole story as concisely as possible—as the corn told me—I would say that the primitive Indian corn was a grass-like plant (a grass in reality) with a branch springing from the several nodes or joints. Each branch was crowned with both staminate and pistillate organs. The *central stem* of the 'tassel' borne by the primitive branch by virtue of its more favorable position, drew into itself the main force of the branch, and became more highly developed at the expense of the surrounding tassel-branchlets, the latter becoming finally entirely aborted. Natural selection lifted the staminate flowers to the tassel of the main stalk and left the pistillate below on the side branches. These branches became shortened, and form the shank or footstalk of our present ear. The shortening of the branches brought the sheaths close together, thus forming the husk or general protective envelope of the ear. The blades not being necessary here, nature lopped them off; though occasionally heredity tags them on. Especially do we find them on the sweet corn. Now instead of a cohering of the branchlets to form the ear, it seems quite clear that such reversions as the sketch on page 53, illustrates plainly how the ear was developed from the *central stem* of the primitive lateral tassel, while the branchlets became aborted. The woody substance became the cob, and the pistillate flowers, having here gained a monopoly, improved their opportunity, and made the most of themselves. Under the kind guardianship of Nature the Indian corn traveled along up through the centuries; but long continued cultivation has been an important factor in perfecting the splendid ear of the present.

"The ears of 'pod corn' figured as the 'primitive corn,' in the article referred to, represent *a* primitive condition of the corn; but at this stage it was already on its way towards the present. This 'pod corn' seems to be a sort of reversion to the time when the nodes of the branch were yet too far apart to admit of the sheaths forming a protective covering. When this general envelope was provided the individual 'husks' were no longer produced.

"The elongation of the pistils is an interesting illustration of adaptation. Before the general covering was furnished for the ear there was probably no such remarkable elongation—it was not necessary until the whole ear became enveloped in the 'husk' or sheaths.

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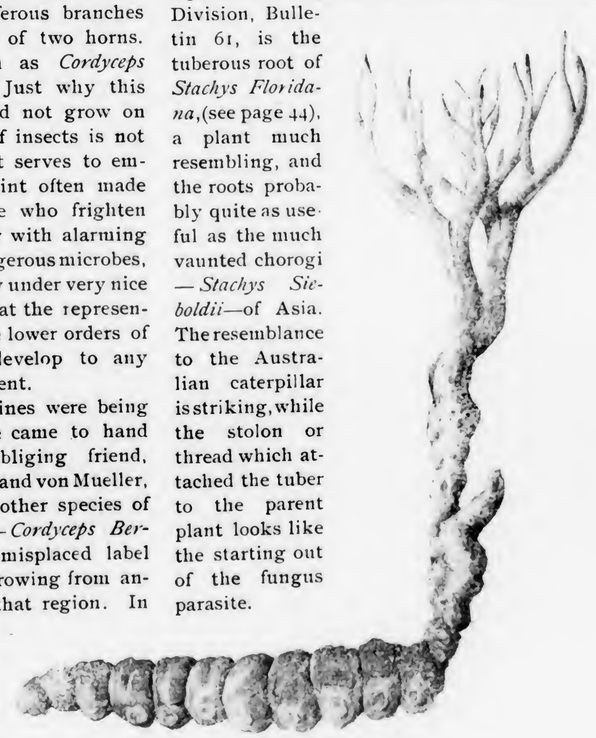
Closely connected is the subject of mimicry in plants and animals. Now it may be a bird, a grasshopper, or some other creature with color so like the earth that the arrangement seems especially with the view of protecting it from predatory neighbors. Some insects have wings formed like the leaves they feed on, and others with wings netted and veined and brown just like the dead leaves of the tree it frequents. Then again there are some roots that are so much like caterpillars that one is lost in wonder why they should want to mimic these living things. One of these, and for which we are indebted to the Bulletin of the Cornell Agricultural Experiment Station, Horticultural Division, Bulletin 61, is the tuberous root of *Stachys Floridana*, (see page 44), a plant much resembling, and the roots probably quite as useful as the much vaunted chorogi —*Stachys Sieboldii*—of Asia. The resemblance to the Australian caterpillar is striking, while the stolon or thread which attached the tuber to the parent plant looks like the starting out of the fungus parasite.



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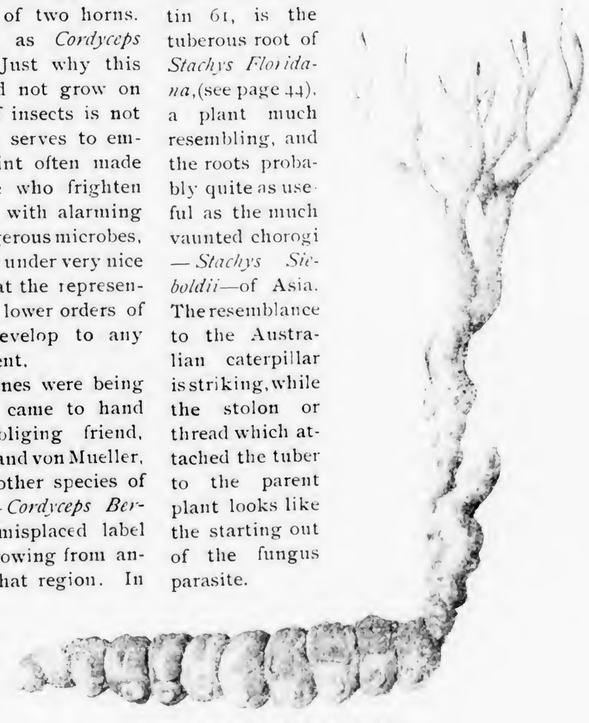

CORDYCEPS BERKELEYI.

INTENTIONAL SECOND EXPOSURE

A CORRESPONDENT sends us the following bit of etymology which may interest some of our readers :—

"MEEHANS' MONTHLY has done, and is still doing much towards fostering among Americans that love and intimate knowledge of natural beauty which is so eminently characteristic of English-speaking people. Take the case of the *Bellis perennis* for example. We find it mentioned away back in the Anglo-Saxon times as 'dayes eaye,' that is 'day's eye,' which appellation gradually assumed the form 'daisie.' It was a great favorite of Chaucer, who wrote of

'——— The Daisie,
That well by reason men it may call
The Daisie or els the eye of the day.'

In later times we find Burns describing it as the

'Wee, modest, crimson-tippit flower,'

and Montgomery sings of it as

'——— A little flower
With silver crest and golden eye.'

In spite of numerous corrections of the error, many people persist in the belief that the larger and coarser ox-eye daisy, (which is not without beauty) is this favorite of the poets. The *Bellis perennis* never grows wild in this country. I have found it on the summit of the chalky cliffs of the south coast of England, so dwarfed that the foliage was entirely undeveloped, and the flower itself poor and stunted, the ray-florets without the least crimson on their tips. To develop the fine color a rich soil seems necessary.

The various allusions to the daisy, by the English poets, show perfect familiarity with the flower. Rhymsters who write of nature at second-hand find the Trailing Arbutus in July, and sweet-scented violets in the September woods. And I have seen carvings in which the forget-me-not was represented with a six-cleft or four-cleft corolla, according to the fancy of the carver."

To the above interesting note may be added the fact that this English daisy has become abundantly naturalized in British Columbia. The writer has seen it in great numbers about Victoria.

LOCAL HABITS OF THE FRINGED GENTIAN.—The writer was much surprised on reading the article, in the MONTHLY for November, on the *Gentiana crinita* (which, by the bye, is accompanied by a beautiful reproduction of the plant) at the statement that it was "one of the rarest plants of that district," alluding to the district embraced within "ten miles around Philadelphia," by Dr. W. P. C. Barton, published in 1818, and that the writer of the article in the MONTHLY "had never collected it at all near Philadelphia."

Your present correspondent has not only known it to be collected in large quantities on the Upper Wissahickon, above the Red Bridge, on the south side of the stream, but has collected it himself, in succeeding years, on a field where its abundant growth gained for the locality, amongst its frequenters, the name of "Fringed Gentian Corner." This favored spot was a piece of cleared woodland, which apparently had never been upturned by the plough, or in any way cultivated, and was sparsely covered by a growth of coarse grass, weeds and brush wood, amongst which cattle roamed at large. It is situated at the crossing of the City Line and Willow Grove Roads. No house was in sight, but following the former road in a westerly direction a quarter of a mile, an old but substantial farm house appeared, opposite which stood a large stone barn,—a "Pennsylvania barn,"—surmounted by a cupola containing a large bell used to summon the farm hands to their meals from distant fields. The road here, or slightly beyond, being the brow of a hill, commanded an extended and most attractive view of the surrounding country, being a part of the Chestnut Hill range; bounded by the blue distant hills in all directions. All this peaceful rural scene, except the view, is past and gone now—the farm house, the quaint old barn, the lonely fields and the sympathetic gentian with them, for the hand of the spoiler has reached them and in their stead have sprung up out of their ashes pretentious country-seats, palatial stables, with all their artificial belongings.

C. J. W.

THE EARLY WHITE VIOLET.—Miss Rose E. Babcock, of Rock Haven, Georgetown, D. C., has a good word for the early white violet. Its blossoms are open before the snow is scarcely gone, being a companion to the trailing arbutus and other flowers of spring. By the description the lady evidently refers to the wild form of the common pansy, which has the first appearance of being wholly white.

GENERAL GARDENING.

SUNSET IN THE VALLEY OF CASHMERE.

Who has not heard of the Vale of Cashmere,
With its roses the brightest that earth ever gave,
Its temples, and grottos, and fountains as clear
As the love-lighted eyes that hang over their wave?
Oh! to see it at sunset, when warm o'er the Lake
Its splendor at parting a summer eve throws,
Like a bride, full of blushes, when lingering to take
A last look of her mirror at night ere she goes!

—THOMAS MOORE.

THE BEAUTY OF MAHONIA.—No low, dwarf shrub is capable of giving so much garden pleasure as the mahonia. The holly-like leaves are evergreen; but with the advent of cold weather, take on a bright, purple tint, which is always as pleasing as many blossoms would be. Before the spring has fairly come, it is covered with a profusion of bright golden flowers; and towards the end of summer, the bluish, grape-like fruit gives an additional charm. In its native place of growth, namely: the woods of Oregon and Washington, it forms a large portion of the underbrush, growing frequently under evergreens, where it never receives a ray of sunshine. This hint should be profitable to cultivators. The proper place for the mahonia is under the shade of trees, walls or fences. When exposed to sunlight in wintery weather, it often loses the greater portion of its foliage, and then is rather shabby, considering its general beautiful appearance. When a mahonia is reported as not being a success, we may understand that the plants referred to have been growing in sunlight. It is wholly a shade growing plant.

ROSENBERG PARK, COPENHAGEN.—A correspondent of the New York *Observer*, who recently visited Copenhagen, describes Rosenberg Park as being in the centre of the city, and as a favorite playground for children. The old trees are moss-grown and the shade made by the branches very dense. No sun can penetrate the foliage. A statue of Hans Christian Andersen, reading to children one of his own stories, has a place in the centre of the Park.

PREPARING GROUND FOR LAWNS.—In preparing lawns, much will depend on the locality. In districts where the summers are hot and dry, very deep soil is of importance; but where the grass will not die out in the more moist regions, this point is not so essential. A heavy clay soil requires different treatment from a light soil, as heavy clays dry out rapidly in summer time. Any care given to making the under-stratum deeper will be an advantage. Manures must also be studied in connection with the soil. In light soils, stable manure is as good as anything; in stiff soils, the artificial fertilizers will do quite as well.

CLIMBING VINES IN GARDENS.—Climbing vines have many different methods of attaching themselves to their support,—some encircle a branch of the host by twining their main bodies around the support. A hop vine is a familiar illustration of this. More delicate ones cannot twist around thick stakes, but have to have string or some similar material to cling to. The ordinary morning-glory is an illustration of this class; but there are some which simply climb by twisting the leaf stalk around the support. This is especially true of the different kinds of clematises, yet it is not unusual in some gardens to see stakes as thick as walking-canes, put for the clematis to run up on; but as it is unable to do this they have to be tied to this pole by twine, while the leaves go on twisting themselves in order to find something to cling to, and as a consequence the vital powers of the plant are exhausted. In many cases the clematis, especially the variety known as *Jackmanni*, will die completely and suddenly from the attack of a minute fungus; but it is more likely that this occurs oftener in cases as described, for want of the proper means of support. Thread or twine for the leaves to twist around, or even a little brush wood, such as we would give to a crop of peas, is much more likely to produce healthy and vigorous clematises than when they are deprived of all means of using their leaf-stalks as tendrils.

SPROUTS FROM THE TRUNKS OF TREES. — Many varieties of weeping trees are grafted on stems, five or six feet in height. The first year the grafts will push out more weakly than they will in future years, when they gain more strength,—in the meantime, sprouts are very apt to come out from the stem on which the weeping varieties have been grafted. A practical man will strip these sprouts off, because he well understands that if allowed to grow, they rob the graft of its proper nutrition. There is no surer way to have a graft destroyed, than to let the sprouts from the trunk grow as they will. It is the same in vegetation as some philosophers say is true of their lives, that "the rich can get richer, and the poor can get poorer," when they once start in those several directions. Certainly a shoot which once gets to be a little stronger than the others eventually draws nearly all the nutrition to itself, and yet it is of great service to have foliage along the stem, because the sap cannot be drawn up without there are leaves actively engaged in the process. Instead, therefore, of pulling out the sprouts altogether, the wisest plan is to pinch out the apex or points of these growing shoots, so as to prevent them from becoming very strong. In the fall then they may be cut off altogether. A good illustration of the danger of allowing strong sprouts to grow from the stems of grafted plants, is seen in the rose. These are frequently grafted on a variety named Manetti. If the grafted part is very strong, it will easily sustain itself; but if there is any tendency to weakness, a strong shoot, or as it is often called, "sucker," will sprout from the stock near the ground. When this is the case it soon draws all the nutrition to itself, and the graft dies. The good rose-grower is continually on the look-out to cut away sprouts which may come out from the stock.

VARIEGATED EVERGREENS.—A large number of the arbor vitæ family and some families from Japan closely related, often produce plants which are tinted with various shades of yellow, brown or white. In the summer season those colors are not well brought out; but in the winter time they seem to be well marked, and a collection of them, judiciously massed, makes one of the most interesting winter adornments of the flower garden.

LILIUM WALLACHIANUM SUPERBUM.—In a recent number of *Garden and Forest* the hardiness of this new variety was questioned. My experience with it is as follows: In the winter of 1892–3 one bulb was overlooked and remained in the ground unnoticed and unprotected throughout the winter. We were surprised the following season by the appearance of a healthy, flowering stalk. Encouraged by this instance, I left half my stock of young bulbs in the open ground during the winter of 1893–4. The bed received a generous covering of pine needles, so much so that I do not suppose the ground froze very deeply throughout the winter. The result was that not a bulb was injured and the entire bed flowered as strong as the bulbs which were stored in the cold cellar. This test, in my judgment, settled the point that they are reasonably hardy. It is doubtful whether the bulbs would endure the freeze of a bare ground in our Northern States. None of our choice varieties should be subjected to such treatment. But with the usual generous covering of leaves, or needles, this variety shows marked vigor and healthiness. The bulbs will also keep as well as a gladiolus, if lifted and placed in a cold cellar. When replanted in the spring they start with such vigor as to insure strong flowering stalks. They show no trace of mildew, or other disease, and must be regarded as one of the most rugged and healthy of the species.

WM. C. STRONG.

Waban, Mass.

THE PROPER SEASON FOR PLANTING EVERGREENS.—"Is early or late planting best?" is a question often asked, and it is frequently said of evergreens that they are better planted after the buds are started; but this again depends on locality. As a general rule an evergreen should be transplanted as soon after the spring opens as possible. It may be said of late planting of evergreens, that they are usually more successful when planted late, than deciduous trees would be.

WATER-PLANTS IN DEEP WATER.—A Delaware correspondent asks whether water-plants would grow on the sloping sides of a cistern at the depth of 25 or 30 feet. Some Potamogetons and the *Vallisneria* would no doubt grow well at that depth, and probably others.

DESTROYING NOXIOUS WEEDS.—A paragraph in MEEHANS' MONTHLY states in relation to the common poison vine, that any plant, poisonous or otherwise, can be easily destroyed by being cut off just beneath the ground, after the young leaves have pushed out, and before they are thoroughly matured. The *California Fruit-grower* asks whether this would be effective with the Russian and Canadian Thistles, and states that the Editors have seen the method tried on the ordinary Canadian Thistle, with little or no beneficial result. It so happens that the thought to try this method of destruc-struction first occurred through the writer having to grapple with the Canadian Thistle question. Soon after the leaves had pushed on some of these pests he cut them beneath the crown once. Possibly half a dozen other sprouts may have appeared some six weeks or two months afterwards, when they were again cut, and no sign of a Canadian Thistle was ever seen afterwards. The principle has since been practiced on other vicious weeds, which in view of the intercourse between so many countries, will occasionally appear. On the grounds of the Meehans' Nurseries, no difficulty whatever is found in exterminating the most vicious weed by this method. If the practice has been found to fail, it is probably through leaving the young leaves on the plants too long, so that they could absorb food and send it to the roots. If cut early enough every root dies. Those who are uncertain of the effectiveness of this can try it on a tree stump,—a tree may be cut down in the winter season, and will throw out a lot of sprouts from the stump in the spring. Let these sprouts be wholly taken off within two or three weeks after they commence to sprout, and the whole of that stump, root and trunk will most surely die.

PINUS MUGHUS.—For clothing spots with dark green, dwarf, evergreen foliage, nothing equals the Swiss Mountain Pine. The specimen illustrated is from one growing in the garden of Mr. Jacob Manning, of Reading, Mass.

THE SCOTCH LABURNUM. — Travelers in Scotland and the North of England must have been struck with the great beauty of the Scotch Laburnum in the early spring time,—the long bunches of bright golden flowers equalling the wistaria in size, and the luxuriance of the green foliage must have strongly impressed them with the extraordinary beauty of this large shrub or small tree,—for it may be classed either way. In our drier climate it is never equal to its Scotch beauty, but still is sufficiently handsome to make it a very desirable plant. For city yards, especially where the soil is cool, it does remarkably well, and on private grounds, wherever a cool, shady spot can be selected for it, there are few things more desirable. In the full open sunlight, however, it is liable to get bark-bound. A very good common name for the plant is "Golden Chain"—the name, of course, referring to the long racemes of golden flowers.

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INTENTIONAL SECOND EXPOSURE

SUITABLE PLANTS FOR HEDGES.—In selecting plants for evergreen hedges, there is now a good list of varieties to choose from. In the central portion of the Eastern States, the Norway Spruce, Hemlock Spruce and arbor-vitæ, are the three favorites among evergreens ; but really, any kind of bush-growing evergreen will make a good hedge, if care be taken not to let the stronger leading shoots get the advantage over the lower ones. Arbor-vitæ is popular on account of its requiring less trimming to keep into shape. Among deciduous hedge plants, the Japan Privet is of late becoming a general favorite. The English Privet, so many years popular in the Northeast, became subject to a fungus disease, which made heavy gaps in the line. The Japan Privet seems free from these troubles. It is often called "California Privet," though a native of Japan. For deciduous hedges of a protective character, the Osage Orange and the Honey Locust are still the most popular ; but no one should think of this unless with a determination to give the annual trimming, and this must be done so as to keep the stronger shoots from gaining an ascendency. There is little difference in the value of one of these over the other. Naturally, they make trees, but if properly trimmed, that is to say, trimmed so that the lower portion is wider than the other, and so as to check the leading shoots, a first-class fence may be had, which will last for half a century, and yet not be more than five or six feet in height. As remarked about evergreens, almost any shrub will make good hedge plants. There is a very wide field to choose from. The barberry, buckthorn and Japan quince are well known illustrations of the adaptability of many shrubs for hedge purposes.

PLANTING WITH A BALL OF EARTH.—It would not do to say that a ball of earth, in transplanting, is never of any value to a tree, but it is certain that more trees are lost under the idea of preserving a ball of earth, than planters generally have any idea of. Within a mile of the writer there was a beautiful avenue of sugar maple trees, possibly 18 or 20 inches in circumference The street grades were changed which left these trees on the sidewalk, about four feet above the surface. An experienced planter was employed to lower these trees. Great care was taken to preserve the ball of earth, and little by little the earth was taken out from beneath this ball, until the tree reached the lower grade desired. A few of these trees put out a weak growth the following year, but nearly all were dead before the year was over. It is forgotten that the best roots of a tree are the young and vigorous ones, the farthest away from the trunk. The large, thick, coarse roots, many years old, are of very little value,—and yet these old stumps are about all that are left, under the "ball of earth" system. To move large trees successfully, a circle should be started nearly as far away from the trunk as the branches extend. It is at that point that we find the young and vigorous roots which it is important to save. Having gone down in this circle some two feet, the earth beneath these young roots can be taken away with a digging fork. All that is then required, is to be sure in transplanting that the earth is packed in thoroughly around the roots so as to leave no air spaces whatever. Large trees moved in this fashion do just as well as smaller ones. Trees 25 or 30 feet high, with trunks 18 inches or 2 feet in circumference, may be taken up and transferred several miles at a comparatively small cost. Plenty of young roots, and packing in all the earth tightly, is about all there is in the success of transplanting trees.

NECESSITY OF HAVING AIR FOR THE ROOTS OF TREES —It is a well-known fact, that when plants are growing it is just as necessary to have air for the roots as for the leaves, and the failure to meet desired success is often as much due to compactness of the soil, thereby excluding air, as to the want of proper food. Underdraining, for instance, is of more value in furnishing air to the soil than in merely getting rid of the water; because when the water goes away, air fills the places occupied by the water. When plants are not growing,—that is to say, when they are in a dormant condition, air is not necessary. Plants will live under water for weeks, in winter time, without injury, when to be a couple of days without water when they are growing, would cause their immediate death. This lesson is of immense value to the practical cultivator,—it is at the bottom of the greater part of a plant-grower's success.

EVERGREEN BEDS.—The great labor and expense of setting out flowering plants each year, has had much to do with the introduction of the evergreen bed. Used in this way, evergreens not only serve the purpose of creating a more natural appearance to the landscape in summer, but also afford a pleasing object to look upon during the bleak winter months, when a touch of green is such a grateful sight.

By careful selection, a great variety of coloring can be combined in beds of this kind. For large beds, specimens of the retinospora, arbor-vitæ, yew, spruce and fir should be used for a back-ground, while in front of these places, the dwarfer evergreens, like the Irish Yew, *Retinospora compacta*, *R. obtusa nana*, *R. squarrosa* and *R. Sieboldi*, the Little Gem and Globe Arbor-Vitæs, dwarf yews, junipers and cupressuses, and small plants of the stronger growing varieties of the *Retinospora*. These varieties will combine many colors,—yellow, green, purple, gray, and light and dark green, making a most pleasing combination.

The plants should be set rather close together, and a judicious use made of the shears, yearly, will keep them from growing too large, and as the brighter coloring is always on the young growth, it will also increase the attractiveness of the bed.

It is not well to trim evergreens during the winter ; about the middle of April is a very good time, or just before they push out their new growth.

AN ORCHID FOR ROOM CULTURE.—A wonderfully pretty plant, well adapted for room culture, is the well-known Mexican orchid, *Cypripedium insigne*. In its native country it grows in the deep shade of woods, so that the obscurity of a dwelling house is rather agreeable to it than otherwise. Then it is in our country a natural winter-flowering plant, and needs no forcing to make it bloom. One plant will not yield many flowers ; but they are almost fadeless. A lady of the writer's acquaintance has a plant, in an eight-inch pot, with seven flowers. These opened early in December, and lasted until the early part of February. The curious slipper-like lip, which has suggested the name *Cypripedium*,—that is to say the "Slipper of Venus,"—is always interesting. When the afternoon sunlight is shed on the flower, the colors are well brought out. It is a plant of the easiest culture, as all summer long it can be placed under the shade of some tree or wall. If it gets an abundance of water, it seems thankful ; but if exposed to drought, it seems to enjoy life all the same. The plant above referred to had been in the same pot for many years.

Besides the interest derived from the study of the curious and beautiful flowers, there is the additional one of testing the remarkable fact that orchids generally cannot fertilize themselves. The central portion of the orchid flower, which is technically known as the column, is a combined mass of stamens and pistils, with the anthers so placed that the pollen—which is arranged in solid club-shaped masses — cannot reach the apex or stigma without external assistance. One can easily find these pollen-masses. When placed on the stigma in this species, seed vessels follow in almost every case. The raising of the seed is a more difficult matter, — but to actually produce the seed is alone a pleasurable feat to the window-plant grower.

THE BEARBERRY, ARCTOSTAPHYLOS UVA-URSI.—It is interesting to note how the same species of plant will choose different conditions, when growing in widely different localities. Along Lake George we see it pushing out of the clefts in the rocks, covering the surface as with rich paper hangings. In New Jersey we find it trailing over sand. In the Rocky Mountains we find it sending its roots deep down into the mass of rotten porphery that one sinks almost knee deep into along the foothill sides. On Lake Michigan they form hummocks in the drifting sands four or six feet high, giving the sandy plains the appearance of a meadow with piles of new-mown hay. The drifting sand covers the plant, but the branches push through and again get covered, when they again push through, maintaining all that collects between its branches, until the immense heaps are built. One of the prettiest sights in nature is to see these hillocks in spring when in bloom, and in autumn with their colored foliage and red berries. One scarcely needs a garden when Nature lays herself for such art as this. The botanical name is rather hard—*Arctostaphylos uva-ursi*. But hard names get easy by practice.

SOWING SEEDS.—As the period of seed sowing is approaching, it will be well to remind inexperienced gardeners that seeds require air as well as moisture in order to grow properly. If the seeds are beneath the reach of the atmosphere they will remain a long time in the earth without growing. A good plan for sowing small seeds is therefore to choose a day for sowing when the ground will powder a little, and then to sprinkle the seeds lightly on the powdered earth, pressing them into the ground with the flat side of the garden trowel. Mr. Peter Henderson, who was one of the most successful practical gardeners we have ever had in America, was so sensible of this fact that he used to recommend for many seeds that they be simply dropped along the outstretched line, and then simply trodden into the ground. This also would have to be done when the ground is dry enough to crush. Very few seeds fail to germinate under these circumstances. Where seeds have been buried a considerable distance in the earth it is well known that they will lie without vegetating for a number of years.

CLETHRA ALNIFOLIA.—Notwithstanding the large numbers of species that bloom successively, so that flowers may be had in abundance for most periods of the year, there is a time, about the end of July, mid-way between spring and autumn flowers, when scarcely anything is open. One of the best things for this spare time is *Clethra alnifolia*,—sometimes known under the common name of Pepper Bush. The long spikes of pure white flowers with the bright yellow anthers render it a particular ornament. In the Meehans' Nurseries there is a bush twenty years old, which is now twelve feet high, and fifteen feet wide. It is impossible to find anything prettier at that season of the year. It has in addition a delightful fragrance. On account of the scarcity of other flowers at that period, it is visited by a very great variety of insects, so that what with butterflies, bees, hornets, and other winged insects of many kinds, the flower has an additional attraction to those which its own beauty affords.

SCHENLEY PARK CONSERVATORIES.—As a rule, park conservatories are arranged more as a permanent exhibition of foliage and tropical plants; but Mr. A. W. Bennett, the Superintendent of the Bureau of Public Parks of Pittsburg, believes in making special attractions each month, and to show that these special exhibitions are appreciated by the public it is only necessary to state that last fall, when the chrysanthemums were in bloom, they were viewed by thirty thousand people in one Sunday afternoon, the walks through the conservatories being so arranged that visitors entered at one door, passing along the various walks and finally out of the door adjoining entrance, making a complete circuit. While the greatest number of visitors were on Sundays, yet large crowds thronged the place every afternoon and evening during the week. The managers of the Traction Company employed a string orchestra at the greenhouses during the entire time the exhibition was going on, and this naturally added greatly to the entertainment of the visitors.

At this writing, February 1st, probably the finest exhibition of cyclamens ever seen in this country is being held there. It consists of no less than 2,000 plants, showing the greatest state of health and perfection. Many plants can be seen having from thirty to thirty five blooms open at one time, while there are sufficient buds unopened to continue the show in perfection for some weeks to come. The arrangement of colors is particularly effective; here and there a number of plants of the Chinese primrose in full bloom add to the beauty of the scene.

By the time the Cyclamens are past their best, the house of Cinerarias, containing some 1,800 plants, will be the attraction. At this time a few blooms are open and some of the most beautiful colors can be found in this collection. One flower of deep royal purple is particularly striking.

Later, the Easter lilies will be ready and with them, a great number of tulips, hyacinths and other bulbs, counted by the thousands, and at the same time the azaleas, genistas and *Chrysanthemum foeniculaceum*, or more properly speaking, *C. anethifolium*, will be in their perfection. An adjoining house has some 2,000 plants of Calceolarias, not yet showing bud but calculated to prolong the flower show later in the season.

The main conservatory is devoted to the usual collection of palms, ferns and other tropical plants, but the unusual condition of health and the thrifty appearance of the plants show that great care and attention has been given to their culture. Particularly noticeable in the collection was a large specimen of *Phœnix spinosa* at one end of the house, covering a space of not less than 20 feet in diameter. At the opposite end of the house, in a similar position, and of equally as large size, is a specimen of the *Phœnix dactylifera* or common date palm. In the centre of this building stands a plant of *Caryota urens*, at least 20 feet tall. On each side of one of the entrances are magnificent specimens of the *Musa Ensete*, many of the leaves being at least 12 feet in length. Another house contains large specimens of Australian tree ferns, purchased by prominent citizens of Pittsburg, from the Australian Government, who had them in their exhibit at the World's Fair. The appearance of this house must reward Mr. Bennett for the care and attention necessarily expended upon it, for certainly in their native element they could not look better. The collection of cactuses, though not large, contains several fine specimens, one clump of *Mammillaria bicolor* having no less than twenty-five of its succulent branches well developed. Mr. Bennett looks forward to the time when he can have an entire house devoted to these interesting and unique plants.

The conservatories are built on the most approved plans, and were designed and erected by the Lord & Burnham Co., in 1892. The entire cost was $110,000 which was given by Mr. Henry Phipps, Jr., for the purpose. Plans are now prepared for the building of a range of houses of the most modern type, for the growing of bedding plants, and for starting and growing on the plants which are to be used throughout the winter for the continuous exhibitions, and embellishment of the parks. The money for building these is also to be given by Mr. Henry Phipps, Jr.

It is the good fortune of some people to have their lot cast in pleasant places and this is certainly the case with Mr. Bennett, who by his unerring judgment and thorough knowledge of his business has endeared him not only to the officials with whom he comes in contact, but also with the people of Pittsburg, who thoroughly appreciate the beautiful exhibitions which he prepares for them.

NEW OR RARE PLANTS.

A DWARF SWEET PEA.—Magazines similar to MEEHANS' MONTHLY must often regret that their limited space prevents them from reviewing catalogues as they do books especially designed for library purposes, for many of these catalogues are quite as instructive, and deserving of as much consideration. It is difficult to take hold of any one without finding a large amount of material which is quite as novel as that which appears in the best magazines. Taking up the catalogue, for instance, of W. Atlee Burpee & Co., of Philadelphia, we find a very interesting novelty spoken of, in a sweet pea which does not climb, but remains as a bush only a few inches in height. This is not the first instance of climbing flowers losing their character and becoming bushy, as we have had the dwarf nasturtium and other similar cases; but a dwarf sweet pea would certainly seem a novelty to most of us.

GAILLARDIA GRANDIFLORA. — Nurserymen and florists have long called in the engraver to convey information to their customers, but the lithographers' art is a little too expensive yet, for general application. When attempts have been made they mostly resulted in mere daubs. But a remarkably good specimen of

THE PRIMITIVE CORN.—SEE PAGE 44.
(Sexual abnormalism in an ear of Indian Corn.)

workmanship appears in Dreer's Garden Calendar for 1895, in *Gaillardia grandiflora*, which looks as natural as life. It seems to be a large and showy variety of *Gaillardia pulchella*, which in itself is no mean ornament of the flower garden.

VIOLET, THE "CALIFORNIA."—New violets have often had to travel under national protection. The Neapolitan Violet carried the Italian ensign,—and the Russian had an equally national significance. The Pacific Coast now presents the California Violet, as ready to enter the lists in the great floral tourney. It is described as a wonder. Flowers immense, colors intense, prolific, several hundred flowers on a single plant, which are borne on fourteen inch stems, etc. It seems to be a first class variety.

CRATÆGUS CUNEATA.—Mr. Wm. B. Alwood, of Virginia Agricultural Experiment Station, Blacksburg, Va., sends a specimen of this one of the evergreen thorns, belonging to the same class as the *Pyracantha*, which they are cultivating under the name of *Crataegus spathulata*. It is a native of Japan, and with its scarlet berries hanging on through the winter, among its evergreen leaves, ought to be a specially ornamental plant. We did not know before that it had been introduced from Japan.

CENTROSEMA VIRGINIANA.—So many of our beautiful native flowers have been neglected, that are as worthy of cultivation as those which grow in distant lands, that it is pleasant to notice the efforts of the Lovett Co., of Little Silver, New Jersey, to introduce the lovely and curious *Centrosema Virginiana*, of which they have issued a colored plate. The name of Hardy Perennial Sweet Pea has been suggested as a pet name, but a more appropriate one may be found.

SWAINSONIA GALEGIFOLIA ALBA.—A Philadelphia florist made a great hit the past winter in growing a whole houseful of the white Swainson flower of New Holland. The flowers are like long spikes of pure white sweet peas, and are well set off by delicate, ferny foliage. They became popular at once when placed on the market. Usually the plant grows too tall, but the florist in question, Mr. David Cliffe, succeeded in dwarfing it without any loss to its free blooming character. The critical, grammatical student would perhaps contend that Robert Brown should have written the name *galegæfolia*, and not *galegifolia*, but we have to take names as the authorities give them to us.

RUBUS SPECTABILIS.—Mr. Blanc sends us a colored Chinese drawing of what appears to be referable to *Rubus spectabilis*, of the Pacific coast, which is also a native of Asia. The golden fruit is depressed globose, about an inch broad. This species has already been taken in hand by California improvers, and good reports may be expected from the experiments. This class of the rubus family is so nearly on the boundary line of the raspberry and blackberry, that, for garden use, a new classification for it seems to be desirable. It is said to fruit earlier than other species,—and on this account, Mr. Blanc proposes for it the name of "May Berry," which, perhaps, is as good a designation as any other.

CHINA BERRIES.—Under the name of "China berries," Mr. Frank H. Lattin sends some of the pretty amber-colored berries of the *Sapindus marginatus*. "The fruit grows in grape-like clusters, on small trees along creeks, in Oklahoma," he says.

THE HARDY FLOWER GARDEN.

LAVENDER.—Among low-growing shrubs, the common garden lavender deserves a place in gardens. It is an evergreen bush, with greenish gray leaves, usually reaching two feet in height. The flowers of a lavender-blue, of course, are not showy, but always interest by their sweet perfume. It is of the easiest culture.

A YOUNG GIRL'S EXPERIENCE WITH PANSIES.—I planted pansies in my flower bed last spring expecting many blossoms later. In the mornings when I visited my bed I noticed that the leaves and often the young tender stems of the pansies were drawn down into the ground and sometimes were broken off. They would be all right when I left them the evening before. I thought it must be the grub or cut worm and commenced to dig, but not one could I find. I spoke of the occurrence to one of my neighbors and they said fish worms were the cause of my trouble. and that I should use Paris Green. I doubted it, but decided to try, so I made a dredge box out of a tin baking powder box and put in about equal parts of Paris Green and flour (little less of Paris Green). In the evening I sprinkled the ground well around the plants, being careful not to get any on the leaves. The next morning I went out to see the effect, when I found the dead worms by the handful and my pansies looking nice and fresh as could be, the leaves and stems being in their natural positions. I was not troubled again for about two weeks, when I found the leaves and stems being drawn down again, and broken, and, of course, my choicest plants. I again used my dredge box several nights in succession, and was rewarded by more worms and better plants. I continued to use my dredge box every time I saw the leaves drawn down, and had no more trouble during the summer.

ELMIRA E. NOYES.

This good letter from one only just entering in her "teens" is a good lesson for older folk. To trace the relation between cause and effect is one of the best steps to a successful practice. Paris Green is not only useful in destroying pests that can be induced to partake of it, but being a compound of copper, destroys mildew and blights that often play sad havoc with our floral pets.

PLANTS TO GROW IN THE SHADE.—The late Peter Henderson, in his *Practical Floriculture*, says that the following plants will grow and bloom in the shade, though of course, none will do as well as if they received sunshine a part of the day: fuchsias. pansies, forget-me-nots, violets, lobelias, lilies-of-the-valley, phlox, and some varieties of herbaceous plants. To this list we can add the tuberous-rooted begonias, which thrive especially well in a shady, moist spot, and bloom profusely.

Mr. Henderson also includes the following foliage plants for a similar situation. Gold and silver variegated leaved geraniums, achyranthuses, alternantheras, begonias, centaureas, caladiums, coleuses, etc. This is well worth noting, as the amateur is frequently perplexed to find plants to brighten just such spots as these, which are to be found more or less in every garden.

FRUITS AND VEGETABLES.

FILBERTS.—The planting of nut trees is a subject that is receiving a great deal of attention, not only by amateurs, but by others, as a source of profit, and it is a subject opening many possibilities from a commercial standpoint. Among all the varieties of nut trees none will afford a greater source of revenue than the filbert. The plants do not attain a very large size, consequently a great number could be planted to the acre; or they could be profitably planted in the orchard, among fruit trees; and as they bear when quite small, about three feet in height, they very quickly pay the cost of cultivation, until they attain sufficient size to become profitable.

Care should be taken to select a suitable spot for the plantation, as the bush is monœcious,—that is to say both the male and female flowers are on the one plant; and if the plants have an unbroken southeastern exposure, the warmth of the sun in the winter and early spring will cause the male flowers to open, and the pollen would be lost before the female flowers expand in the spring. For this reason a northwestern exposure is preferable; but if the plants are set among other trees or shrubs, so that they are somewhat protected from the sun in winter, any exposure will suffice.

Amateurs, in planting filberts should bear this in mind. There is always a spot north of the house or stable, or among clumps of trees and shrubs, that would be just suited for the cultivation of the filbert.

The varieties *Bergeri*, *Geante de Halle* and *Merville de Bollewieller* are probably among the best sorts. The nuts of these varieties are large, and the plants seem unusually prolific.

BRUSSELS SPROUTS.—Nothing is more remarkable than the many varied products of the one original of the cabbage tribe. The writer of this has collected the cabbage in its native localities. It is a spindling plant with a few grayish, succulent leaves usually not more than three or four inches in diameter at the base; and yet from this one wild stock has been produced the various forms of the cabbage tribe, including the red cabbage, savoy, various kinds of Scotch kale, cauliflower, broccoli, Brussels sprouts, and many other similar plants which the cultivator of vegetables can

readily recall. Probably no wider range of variation can be found anywhere in the vegetable kingdom. Some of these vegetables, however, are not nearly in as common use as they deserve to be, and this is particularly true of the Brussels sprouts. Comparatively few, indeed, know of it at all. We were strongly impressed with this while looking through the admirable vegetable catalogue of J. M. Thorburn & Co., of New York, and they have kindly allowed us to reproduce here the illustration which they have made, in order not only to show its manner of growth, but also the manner of its cultivation. The stem in reality is a nest for scores of young cabbages. The little heads, as will be seen by the illustration, are produced abundantly along the stem. They are all the better for being eaten after a

little frost has occurred, the frost seeming to give some sweetness which does not exist before the low temperature occurs. The seeds are sown in the spring, without any more care than is usually given to other cabbage seed; but still more detailed instructions will be found in seedmen's catalogues.

MUSHROOM CULTURE.—A Berlin correspondent of the *Gardeners' Chronicle* says that "a new mode of mushroom culture was shown at the last meeting of the Verein fur Beförderung des Gartenbaues at Berlin, November 29th. Old cement casks are filled one-third with half-rotted horse-dung, and in this dung is laid the spawn of the Agaric. The casks are laid on their sides in rows one above the other, the spaces between them being filled in with fresh horse dung, which affords regular warmth, and is afterwards employed for filling the casks. The casks are laid in a cellar, and furnish after a short time a good and regular crop. This mode of growth may be recommended for its cheapness. If one or another cask becomes by any cause unproductive, it may easily be withdrawn. The grower said that the warmth produced by the horse-dung is far better for the growth of the fungus than any artificial warmth, and the dung, after its warmth is spent, is used as a substratum in the casks. Cement casks are cheap, being sold here at 3*d*. each. The casks are covered over with the horse-dung after spawning and soiling."

THE PRODUCTIVENESS OF THE BARTLETT PEAR.—It is said, by some good authorities, that the Bartlett Pear is one of the varieties that sometimes produce weak anthers, and that for want of pollen, the tree is sometimes unproductive. In this case it has to depend on pollen from other trees. This can scarcely be the case in the Central States, for there trees entirely isolated, regularly bear full crops. Sometimes, instead of the want of pollen, the infertility arises from a difference between the maturing of the pollen and the appearance of the female flower. In those localities where there are oftentimes warm spells in winter, the pollen will mature far ahead of the development of other parts of the flowers. When the flower is, therefore, really in bloom, the pollen has all been perfected and blown away. This is probably the real reason why many fruit trees are occasionally infertile.

THE LORENTZ PEACH.—Mr. Reid, of Bridgeport, Ohio, states that the Lorentz Peach originated in the orchard of Mr. Fred Lorentz, Marshall Co., W. Va. It is a yellow fleshed peach with a bright red cheek, free stone, and ready for market in that part of Ohio, by the 25th of October. It is of a medium size, and is said to keep well for two weeks after being gathered.

PARKER EARLE STRAWBERRY. — Professor L. H. Bailey has a good word to say for this new variety of strawberry, Parker Earle, which was raised in 1889 by Mr. T. V. Munson, of Denison, Texas.

THINNING OUT YOUNG CROPS. — Few practices are more profitable in the amateur's vegetable garden than thinning out garden crops as soon as the young plants are above the surface. If the knowledge of the proper sowing of seeds was more widely prevalent, when the number of seeds required to make plants only need be sown, no thinning would be needed; but so many persons sow the seeds, fearing that numbers will fail to grow, and therefore, many more seeds are used than is necessary. But sometimes all these superfluous seeds grow, in which case it is desirable that they should be thinned. Not only do the vegetable plants grow larger under these circumstances, but in many cases they come earlier into use.

DRYING PEARS.—W. C. Fuller, of Colton, California, finds that pears can be dried in the shade, in the climate of California, and that they are a better article than when dried in the sunlight.

THE BOURGEAT QUINCE.—In 1872, a variety of the common quince was introduced directly from Asia, and described by M. Carriere, in the *Revue Horticole*, as a sub-variety of the species, and naming it *Cydonia Bourgeatii*. It can scarcely merit the distinction of being more than a marked variety. In the February number of MEEHANS' MONTHLY, p. 36, some notice of it appears, and its large, healthy leaves referred to.

Mr. Young kindly sends some of the fruit, which well sustains the character given as an excellent variety.

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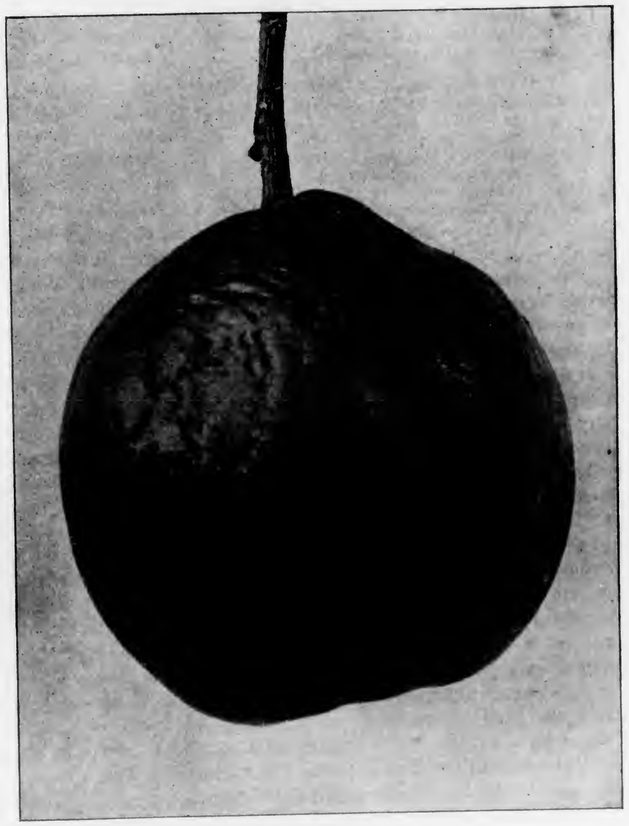

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COPPER SOLUTIONS FOR FUNGUS DISEASES.—Though the ingredients for copper mixtures have been so often published, inquiries still come for a formula. The usual mixture is six pounds of copper sulphate and four pounds of lime, to twenty-two gallons of water. Sprayers are so numerous that it is difficult to name any one that is better than another.

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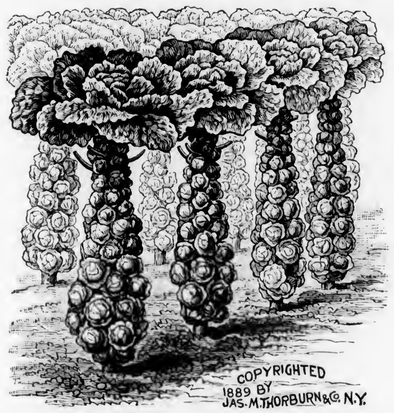

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INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

ISRAPHEL.

A dreamer 'midst the stars doth dwell
Known to the gods as Israphel.
His heart strings are a lute ;
And when, the magic notes outpouring,
He parts his lips, the gods, adoring,
Listen in transport mute,
Subdued and softened by the spell
Of the dreamer, Israphel !

And mortals, when they hear him start,
And full of wonder, call him—Art,
And fain his gift to gain,
Essay to imitate the fashion
Of his rare song, and breathe its passion,—
But, ah, they strive in vain ;
For his song is more than art,
Whose lute-strings are his heart !

And others, unto whom he wings
The sweetest melodies he sings—
In worship, name him—Love ;
Yet longing the pure strain to capture,
When at the very height of rapture,
A sadness oft approve,
And fancy, strangely, that he wrings
The music from their own heart strings !

—Florence Earle Coates.

The Growth of the Mistletoe.—A recent writer has attempted to explain the reason why the mistletoe is now found so rarely on the oak, in England, when in the time of the Druids it was undoubtedly found in considerable abundance. The Druids in times past never had any difficulty in finding all the mistletoe on the oak that was desirable for their religious ceremonies ;—but they would have hard work to find enough on oaks in England to perform their ceremonies in these days,—on the other hand the mistletoe is found in extreme abundance upon apple trees. To such an enormous extent is this the case that it is almost as essential to fight the mistletoe from the apple trees as we have to fight weeds from any garden crops. The author referred to, points out that the apple tree was apparently unknown in England until taken there by the Romans, and therefore this transition of the mistletoe to the apple tree from the oak must have occurred since that time. Hitherto the cause of this transition has been a mystery ; but the writer calls to mind the well-known fact that the seeds of the mistletoe are carried to trees by birds. Birds feed on the berries, and then on account of the sticky nature of the pulp clean their bills against the branches. The seeds then sprout, and grow where the birds place them ; and further it is shown that birds frequent those trees near which they get the greater supply of food or greater protection. This they find to a greater extent in apple orchards than among oaks. The birds, therefore, having transferred their homes from the oak to the apple tree, this naturally accounts for the absence of the mistletoe from the oak, and for its abundant presence in the apple orchard.

The Love Vine.—Mr. E. E. Bogue, of Orwell, Ohio, has the following note about the Love Vine :

"In the magazine for January, 1892, p. 6, I notice your query in regard to the 'Love Vine.' It strikes me that the plant may be some species or variety of the genus *Vinca*. I used to be told that *V. minor* was called 'myrtle,' and supposed that was true, until I came to know that 'myrtle,' (*Myrtus communis*,) is altogether a different plant.

"It is well known that some people try to express their sentiments through the so-called 'language of flowers.' The language of the true myrtle is 'love,' and that of Vinca—sometimes known as 'periwinkle'—is 'early friendship.' Is it not possible that some innocent, ignorant, inconsistent people enwreathed the spirit of love with a species of *Vinca*, because they had heard it called myrtle and thought they had the genuine article? While *Vinca* is an introduced genus I can not explain how the Indians should have any legend in regard to it, unless it was introduced by some of the very early explorers. It has but few roots and grows spontaneously, just as likely as anything else."

The *Vinca minor* goes by the name of "myrtle" almost altogether in the Eastern States. The true myrtle of the poets, as Mr. Bogue says, is an entirely different plant.

Pomology.—The frenzy which has recently seized so many botanists, pushing them to turning upside down the accepted names of plants, on account of the abstract law of priority, in some cases a dead letter for a century, seems to be extending to other branches of intelligence. In a paper by a famous horticulturist, published recently, objection is taken to the word "pomology." He insists that it should be dropped, and that we should adopt the term *Fructiculture*. This of course, is from the Latin *fructus* (a fruit). But even this will scarcely bear critical support, for although, the moderns connect the word *pomum* with apple, in the days when the Latin was a living language, *pomum* simply meant an edible fruit ; and it is even charged that the word "apple," as used in the Bible account of the Garden of Eden, is not a fair translation of the original word. On the other hand *fructus* as a fruit, is by no means to be confined to that which is edible,—the seed vessel of any plant might fairly be classed under the word *fructus* ; but there seems to be no end to the effort for a pure nomenclature no matter to what absurdities the effort may lead.

Dried Plants of California.—It was stated a year ago, in Meehans' Monthly, that Mr. George Hansen, of Jackson, Amador Co., Cal., proposed to collect specimens of the native flowers in the vicinity of the groves of the Mammoth Trees, so as to have them for travelers who might like to carry away with them, these flowers as mementoes of that remarkable region. Mr. Hansen has really done more, and made a complete collection of the flora of that region. Many of these are extremely rare, and as they are all named with strict botanical accuracy, they are already in demand for some of the leading herbariums of the Old World. Collections have been ordered for Berlin, London, Geneva and St. Petersburg. Mr. Hansen is offering them for sale at $8.00 a hundred species.

Women in Botanical Honors.—The highest graduate in botany in the recent biological examination at the University of Pennsylvania, was a woman with an average of 100. The next, averaging 99, was also a woman. A man also received 99, the next in honors,—95, was a man.

Diana as a Goddess of Agriculture.—Diana is usually regarded as the patroness of the chase, and is often represented with bow and arrows, hunting in the woods. At the Columbian Exposition, she was made to "roost," (as a correspondent expresses it,) on the Agricultural Building, and the question is raised as to what business she had there. A lady answers the question by an extract from Alexander Murray's "Manual of Mythology."

"Originally, Artemis, or Diana, was the divine personification of the moon, just as her twin brother, Apollo, was God of the Sun.

It was observed that the vegetation of warm southern climes, spread and flourished most under the quickening influence of the coolness of night ; and the fall of dew, which often for whole months was a substitute for the missing rain. It was known by experience that the fall of dew is most copious when the sky is clear and the moon sheds her pure light, and hence to Diana or Artemis was ascribed the cause *of fertility in this direction*."

Our irreverent correspondent, who has evidently been the victim of an unpopular microbe—*Bacillus tributivorus*—expects to get relief by praying to the "goddess of *dues*."

Dr. Geo. A. Rex.—Cryptogamic botany suffers a severe loss in the death from heart-failure of Geo. A. Rex, of Philadelphia, which occurred on February 5th. He was in his fiftieth year. He was recognized as a leader in the knowledge of microscopic fungi, and especially as a colleague of Mr. John B. Ellis, the famous mycologist of New Jersey. He was a native of Philadelphia, and a member of the council of management of the Academy of Natural Sciences. This is the second councillor the Academy has lost within a few months, the death of Dr. J. Bernard Brinton, being recently chronicled.

Mrs. Kate N. Doggett.—The Chicago papers state that a public memorial is to be erected to that admirable woman, Mrs. Kate N. Doggett. Amateur botanists were proud of her. She had a warm interest in all the sciences that bear on popular gardening and rural affairs. A welcome leader in Chicago society, she yet found abundant time and means for efforts in the good of humanity, and in the advancement of her sex especially.

GENERAL NOTES.

ADVANCING PLANT GROWTH.—It is said that tricksters in India will plant a seed in the earth, cover it with a cloth, and a young plant will appear and grow several feet high in a few minutes. Few believe in this report to its fullest extent; but a French observer, Monsieur Bagonneau, declares that he has seen it, and that these Hindoos bring special soil prepared, in which the seed has to be planted; and that he discovered that the earth was brought from the vicinity of ant hills, and that the earth contained a large amount of formic acid. He says he has repeated the experiments. He placed a quantity of ants in boiling water, and in that way obtained strong formic acid, and that by watering the seeds with this acid, he obtained as extraordinary a growth of the plant as attributed to the Hindoos. The so-called experiments of this Frenchman are being widely quoted in the daily newspapers, yet it must be familiar to most observers, that the vegetation in the vicinity of our American ant hills is no stronger than the vegetation elsewhere. If however there be any who have faith in the result of these so-called experiments, it might be well to suggest that they test their faith again the coming season.

PRESERVING FRUITS BY CARBOLIC GAS.—The *Pacific Rural Press* states that actual experiments have been made in sending fruit to Chicago from California, preserved by means of carbonic acid gas, which proved a great success, and that the fruit reached its destination in a much better condition then when brought in the usual refrigerator cars; that the cost was not one-half that which is incurred under the regular refrigerator system, and that the price realized for the fruit was higher than that received in the old way.

VIOLET CULTURE.—Violets are grown on a large scale in California. For these flowers Mr. Robert Armstrong, of Mountain View, Santa Clara Co., has two acres,—the varieties being Czar, and Marie Louise.

ALGÆ.—Sea weeds and the lower order of water weeds known as Algæ, whether growing in salt or fresh water, have an interest for the lover of the curious and the beautiful, as well as to those who dive deeply into the secrets of Nature. Mr. F. S. Collins, of Malden, Mass., has prepared sets of dried specimens on 12 by 9 inch paper, botanically named, which he will exchange for species of other districts, or possibly sell to those who have nothing to exchange.

NEW PARKS IN CLEVELAND. — Cleveland, Ohio, is falling into the popular ranks in favor of additional city parks. They already have beautiful avenues lined with trees, which give portions of the city a park-like appearance. It is proposed to secure two different plots,—one to be called "Indian Mount Park,"—the other "Cleveland Park." The former is supposed to cost about thirty thousand dollars,—the latter, ninty-three thousand dollars.

THE COPPER-COLORED IRIS.—The remarkably rare and singular copper-colored iris, *Iris cuprea*, will come up for the colored plate in April. It is the object of the publishers to give representations of the flora of every section. California, New England and New Jersey have been favored recently, and now a place is given to Missouri.

DARLINGTONIA CALIFORNICA.—It was overlooked when writing the chapter on this curious plant, to state that the specimens, from which the drawings were made, were kindly furnished to us by Miss M. Davis, of Birmingham, Pa.

THE ARBORETUM OF THE OHIO STATE UNIVERSITY.—Mr. Ernest E. Bogue, of Orwell, Ohio, writes that there is an excellent collection of trees and shrubs on the grounds of the Ohio State University.

IRIS CUPREA.

COPPER IRIS.

NATURAL ORDER, IRIDACEÆ.

IRIS CUPREA, Pursh. - Stem simple, furrowed and angled on one side; leaves linear-sword-shaped; flowers axillary and terminal, single or by pairs, crestless, dull yellow: tube of the perianth somewhat inflated, as long as the six-angled ovary; stigmas scarcely longer than the anthers, about half as long as the petals, the lips nearly entire; capsule tumid, six-angled. Swamps in the lower districts of Georgia (*Elliott*) and westward. April and May. Stem, three feet high; leaves, two feet long; flowers, two inches long. (Chapman's *Flora of the Southern United States*. See also Gray's *Manual of the Botany of the Northern United States*, and Wood's *Class-Book of Botany*.)

The natural order to which *Iris* has given its name, *Iridaceæ*, is a somewhat extensive one, there being over seven hundred well recognized species included within it. It has a wide distribution, being represented in some form or another over the whole world,—tropical regions as well as temperate ones having some species recorded in their flora. Of these, about two hundred are represented by *Iris* proper, while the balance are more nearly allied to the section represented by our "Blue-eye grass," *Sisyrinchium*. Of the two hundred more closely related to *Iris*, about one hundred would be considered true Irises; but comparatively few of these are natives of the New World. The well known "Tiger flower" of gardens, *Tigridia Pavonia*, a Mexican bulb, is a fair representative of the section in South America. Of true Irises, Dr. Chapman recognizes only seven species as native to the Southern States. Gray's *Manual of Botany* gives only six, only one of these—*Iris lacustris*—being different from those already recorded by Chapman. In the central portion, or Rocky Mountain region, Coulter records only one species, *Iris Missouriensis*, while the "Botany of California" names but six, one of these being the *I. Missouriensis* already noted. The species now illustrated, *Iris cuprea*, is especially limited in its range, being confined to a tract between the Mississippi at about St. Louis and western Georgia.

Nothing was known of the Copper Iris till the beginning of the present century, when it seems to have been found nearly simultaneously by two of our zealous collectors, Lyon and Enslen. The first account of it occurs with a colored plate in the *Botanical Magazine*, with the following note of its history: "An unrecorded and singular species, differing from any known to us in the color and inflection of the corolla Found spontaneously on the banks of the Mississippi, in low ground not far from the town of New Orleans. Introduced into this country in 1811 by Mr. Lyon, a very intelligent and industrious collector of North American plants. It is hardy, blooms in June, seeds freely, and is easily propagated by dividing the root stocks." This was in 1812, plate 1496, and is there described as *Iris fulva*. But Pursh, in his *Flora of North America*, published in 1814, describes it as *Iris cuprea*, and says it grows "on the banks of the Mississippi near New Orleans, discovered by Mr. Enslen, collector to Prince Lichtenstein of Austria." Little discrepancies, such as these, are often deemed too trifling to discuss. But often it is the little truth that in history influences the greater. In this case, Lyon, the botanical collector died, while he was on his travels, and was buried in Asheville, North Carolina. The exact route of his journey has always been considered of great interest in botanical circles. From the note in the *Botanical Magazine* it might be inferred that he collected in New Orleans; but it is pretty certain he was never in that direction. Pursh, as appears by the "Introduction" to his "Flora," was on terms of intimacy and friendship with both of these collectors,—it is more than likely that his account is the proper one. The same year that Pursh reached England to prepare and publish his work, the plant was described as *Iris fulva*. Pursh must have known of this, when two years later he described it as *Iris cuprea*. The care which he takes to repeat just what the other said, changing only Enslen for Lyon,

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INTENTIONAL SECOND EXPOSURE

and St. Louis for New Orleans, and naming the plant as the other did, on its peculiar color, looks as if the re-naming was intentional; but the reason may ever remain a mystery. All American authors have followed Pursh in the nomenclature of the plant, though well knowing that the law of priority should rule. *Iris fulva*, under the rules strictly enforced, should be the adopted name. Perhaps if the whole undercurrent could be revealed there might be found some reasons satisfactory to them why the earlier name was set aside. In everyday life, strict law or rule is often made to give way to what seems to be sterner justice.

Though the species was first discovered near St. Louis, it was soon after noted by Stephen Elliott in his work on the Flora of South Carolina, and specimens are not uncommon in herbaria from many collectors. The drawing for this chapter was made from specimens kindly communicated by the late Dr. Geo. Engelmann, from St. Louis. As a matter of artistic taste, it is probably one of the most successful of Mr. Lunzer's paintings, and will serve as a model for floral pictures. The whole plant is represented from its strong rhizome to the latest undeveloped flower bud. To give this on so small a sheet the specimen had to be cut into four sections; yet these are so deftly arranged as to make the picture far more beautiful than Nature painted it.

Iris—the Rainbow—the flower of Juno, has entered so extensively into polite literature that a large treatise would be necessary to cover all that relates to it. The flame color of our present species recalls the love of the Germans for the species common to their land, of which a German author says: "The Yellow Iris is a rustic plant that the German peasants cultivate on the tops of their cottages. When the air agitates its beautiful flowers, and the sun gilds their petals, mixed with gold, purple and azure, it seems as if light and perfumed flames rested on the tops of these rustic cottages." Another curious story is told in connection with this power of the German Iris to grow amongst the mortar of old walls. It refers to an Iris growing out of an old tomb in which a good man was buried. The plant is occasionally called *Ave Maria* flower, on account of a knight who devoted himself wholly to prayer to the Virgin. He had so little education that the two words of the Latin prayer, *Ave Maria*, were all he learned well and all he repeated. From his grave an Iris sprung, and in its flowers the words *Ave Maria* could be distinctly traced. Struck by the circumstance the grave was opened, when it was found that though the body of the holy man was mouldering, the lips were still perfect, and that the main root of the Iris proceeded from the lips that had so often uttered the holy words. In the drawing of *I. cuprea*, given with this, it is not difficult to trace some of the letters of *Ave Maria*, and it is not difficult to believe, with a little play to imagination, some one gifted with a mind to detect resemblances, and impelled by religious fervor, could readily believe all the letters could be made out among the various flowers of a good-sized plant.

The study of the flower presents some points of interest. As in endogenous plants generally, the parts of the flower are arranged in whorls of three. The stem is somewhat three-angled. The whole flower would be called a perianth, in the strict language of botany, but the three narrower of the segments would form the calyx and be the analogues of sepals in exogens. The three broader ones would form the corolla proper, consisting of three petals. The next series, stamens in the Iris, have retained the usual form, and are in the picture hidden under the pistils, which have a narrow petal-like appearance in the centre of the flower. It is this peculiar petaloid character of the pistils of iris that furnishes one of the chief distinguishing characters of the genus from other genera. But the greatest surprise is to find the styles on the same line with the stamens. Analogy and the laws of morphology should represent them as alternating. Every distinct series alternates with that below. In this Iris we see that the broad petals alternate with the narrow sepals. The stamens should then alternate with the petals and be opposite the sepals; but they are not. The mystery is rendered deeper by the styles being opposite the stamens. No botanist has, therefore, been able to explain exactly the plan on which Nature formed the flower of an Iris. It is a satisfaction to feel that all has not been discovered, and that something of interest is left to be found out by the younger generation. A comparison with an orchid is instructive.

EXPLANATION OF THE PLATE.—A complete plant from St. Louis, furnished by Dr. Geo. Engelmann.

WILD FLOWERS AND NATURE.

THE TRAILING ARBUTUS.

"Of all the sisters of the meadows far
Widening out under the vernal sun,
Or in the woods and fields that dwellers are,
There is not one,—
Not e'en the low and downy wind-flower blue,
That overjoys the heart with beauty more,
Or sends a sweeter thrill the spirit through,
Than thou. Thy name doth ever unto me
Bring thoughts of early beauty silently—
Of the sweet springtime when, the winter past,
The flowers unfold at last."

—HOWARD WORCESTER GILBERT.

FRAGRANCE OF THE TRAILING ARBUTUS.—Mr W. J. Petty, Bradford, Pa., writes that a bunch of the pistillate flowers of the *Epigæa repens* is not as sweet as a bunch of the staminate ones.

ECHINOCACTUS WISLIZENI AS A VEGETABLE.—Mrs. Drennan tells the *Southern Florist and Gardener* that the Indians use the spines of the great cactus, *Echinocactus Wislizeni*, for fish hooks,—and that the Mexicans cut off all the spines, cut up the head into small pieces, and drop them into boiling sugar. The head is often washed and made into cough syrup,—which, the Indians say, is useful in cases of consumption.

DEATH OF FERNS FROM OLD AGE.—"Do ferns ever die of old age?" is the startling question of a Washington correspondent. Most ferns have a creeping root stock, or rhizome as it is technically called. Roots go down from the apex, as the new fronds push up, and eventually the under part of the rhizome dies. Ferns of this class may live for ever, in a certain sense, though really no part, alive to day, may have been living ten years ago. But some ferns have been ambitious and instead of groveling under ground, have learned, as the evolutionists might say, to straighten the rhizome and lift it into the air. Then we have the tree fern, or one with an erect crown at any rate. It is not possible for ferns of this class to live forever. They must eventually die of old age.

THE FRAGRANCE OF FLOWERS.—During the past year or so, much has appeared in MEEHANS' MONTHLY regarding the varying character of flowers in regard to fragrance. Attention was first drawn to the subject from the contradictory reports regarding the Wood Honeysuckle, *Azalea nudiflora*. Experiments conducted by the MEEHANS' MONTHLY staff, show that a number of kinds of flowers are fragrant only when they first expand,—only a very few like the rose "continue faithful to the end." Many flowers have their regular time of opening. It may be in the morning or evening. It is now easily understood how varying must be each one's experience. It depends on what time of day the observation is made.

HIBISCUS MOSCHEUTOS.—Regarding the adaptability of this plant to dry ground, as noticed in MEEHANS' MONTHLY for November, it may be added that such conditions, rather than those which are strictly swampy or marshy, are the prevalent ones, where I have met with it in a wild state in the West. It is found in the neighborhood of Chicago, where its habits are quite different from those in the brackish marshes of the sea coast. It generally grows near the borders of ponds, and along rivers, sometimes where the ground is wet, but away from any influence of salt water or salt springs. By the subsidence of water in ponds or their obliteration by ditching, as in some cases in the sandy, wet lands at the head of Lake Michigan, it may be left quite remote from standing water, persisting and thriving in the midst of the grass which springs up around it, and in such situations as may be natural to the meadow lilies. I have seen it a near neighbor to such dry-land trees as the Black Oak and the Overcup Oak. Last summer, plants were observed by the Nankakee River, in Indiana, growing by the side of *Hibiscus militaris*, so that both had the same habit, and were so high up on the gravelly bank as to be beyond the reach of the waters of the stream, except at flood stages. E. J. H.

DISEASES THROUGH PARASITES.—Minute animal and vegetable parasites are now known to be the immediate cause of many of the diseases of plants and animals, but we do not yet know what are the direct causes which set these low organisms in motion. But this will come in time. What was once called influenza, or latterly "grippe"—a low fever with many of the symptoms of what is ambiguously termed "a cold," is caused by a small bacterium, *Asthmatos ciliaris*. The germs of these little organisms seem to be continuously existent in localities where they have once been known. But they are not active, and consequently not observed, except when some peculiar combination of conditions occur.

There is no difference, in this respect, between them and the common mushroom. Spores, or reproductive organs of the mushroom, will lie in the ground for many years in a perfectly torpid state. It is only when the exact temperature, the exact degree of humidity, the exact quality of food, all meet together in conjunction, that the spores develop, and a full blown mushroom, with its cobwebby mycelium underground, rapidly grows. The millions of dollars spent, by municipal corporations, in "stamping out diseases", by various contrivances to destroy germs or spores, are usually wasted. Though millions may be destroyed, millions can never be reached, and these will make matters lively when the conjunctive conditions meet. Fortunately Nature does not permit this often. The true effort lies in preventing the meeting of these conditions for germination ; but until science tells us just what they are, we are powerless. But it will come in time.

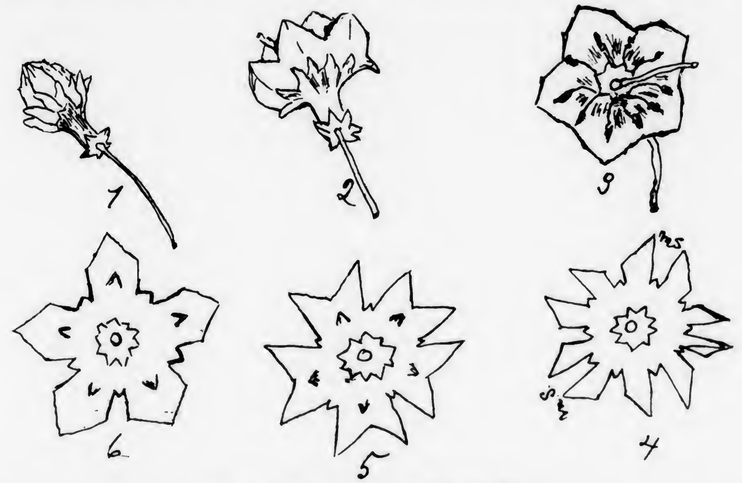
ERYTHRONIUM AMERICANUM. — Professor Bonser, Superintendent of Education, Carey, Ohio, writes that he has observed a difference in the stamens of the American Dog-tooth Violet, *Erythronium Americanum*. He notices that the flowers of some plants have yellow stamens, while in other flowers the stamens are brown. It is just possible that there is a tendency to abortion in the stamens of some flowers, and that the different colors are all in this line. If the anthers alone, and not the whole stamen, were referred to, the brown ones would undoubtedly be considered as a sign of barrenness.

THE VANILLA BEAN.—What is known in commerce as the Vanilla Bean is the seed vessel of a species of orchid called *Vanilla planifolia*, which creeps up trees as ivy does over a wall. It grows in the warmer parts of Mexico, where there is a mean annual temperature of about 86°. Though much is gathered from the wild plants, it is largely cultivated. U. S. Consul Shaeffer says : "The bean grows on a vine larger than the hop vine, but similar in its growth. Slips of the vine are planted, about three in number, at the foot of small trees, in ground prepared by spading or turning over the soil close to the tree ; no other cultivation seems to be needed. These trees are planted eight or ten feet apart, the vine running or climbing to the top, whence it is conducted by poles from one tree to another, resembling a hop field. The ground between the trees is not disturbed, except immediately about the roots, where it is cultivated twice yearly. The vine does not produce during the first year, and very little the second, but in the third it is supposed to bear a full crop, which is about ten to twelve ounces of first-class beans, ten to sixteen ounces of second-class beans, and fifteen to twenty ounces of third-class beans. This weight is after curing. The life of the plant is ten years."

VARIATION IN THE BITTERNUT.—Mr. S. J. Galloway, of Eaton, Ohio, sends a sample of the bitternut,—*Carya amara*—with the nut rather longer than and somewhat varying from the normal form. He believes it a hybrid between the bitternut and the pecan, which is an opinion somewhat justified by the deviation from the regular form. Those, however, who are in the habit of collecting seeds of forest trees, are familiar with similar variations in other species of hickory, and indeed in all the different kinds of forest trees. Some have more upright and others more spreading branches ; again the leaves will be more lobed in some cases, and less lobed in others. Differences especially occur in the fruit ; in some oaks, the acorns will be longer and slender, and in others shorter and thicker, or the cups will be deeper or shallower ; and what is true of the oak and the hickory is true of almost every kind. The range of free variation is so great that there is no necessity for calling in hybridization to account for it.

ORIGIN OF THE KALMIA "POCKETS."—One of the beautiful sights of summer is a hillside pink, white and green with the lovely flowers and rich glossy leaves of the kalmia. One cannot resist the temptation to carry home with him an armful of the lovely flowers.

Besides the pleasure of visiting the flowers in their wild-wood home, and the satisfaction of possessing myself with the coveted bloom, I took much interest in trying to solve the problem of the little "pockets" found in the kalmia blossom. The anthers seem to be sleeping, even after the flower opens, until a little sudden jar, produced oftenest, perhaps, by the alightening of an insect, arouses them from their slumber, when out they fly.



ORIGIN OF THE KALMIA "POCKETS."

What was the origin of the "pockets"? How came they to be so exquisitely made that each anther fits into its "pocket" so exactly? If the little curious "pocket" was just a little deeper, the anther would be retained too long ; if it were a trifle shallower, it would fly out too soon, and hence we recognize that it required a skillful tailor to fashion them.

If we examine a bud of the kalmia, as shown in Fig. 1, we find that the lobes of the corolla cohere more or less firmly; even at this stage, however, the lobes will spring apart, if a slight pressure be made upon the apex of the bud. As the flower matures, the lobes spread apart, as in Fig. 2 ; and in Fig. 3, the anthers are ready to spring out of the "pockets," upon the slightest provocation.

While looking and wondering and questioning how these "pockets" could have originated, I accidentally pulled the flower apart ; or, perhaps, Nature, by some slight-of-hand, tore the lobes asunder, that I might see into the mystery of the "pockets." It seemed, at least, that here was the key to the solution.

If we take a flower, such as shown in Fig. 3, and separate the lobes as far down as the "pockets," it gives us Fig. 6. We find, by repeated trials, that these lobes *separate thus far quite readily*

Now, if we take another flower, and instead of separating the lobes, we tear carefully down through the middle of the lobes as far as the "pockets," we get a corolla like Fig. 5. We find, here, that the division is not as readily made as between the lobes : but it is quite obvious that coalescence has had something to do with the formation of these puzzling "pockets." Taking still another flower, and tearing down between and through the lobes to all the "pockets," we have a corolla such as shown in Fig. 4. This, it seems to me, is the foundation,—the original, or better perhaps, *an earlier* type of flower.

I would say, therefore, that it was by the union of the segments of the corolla that the incipient "pockets" were formed. Judging from

the manner in which the lobes of the corolla now separate, when torn apart, the middle pockets were earliest formed, *i. e.*, these middle segments (marked M.S. in Fig. 4) were the first to coalesce, and this coalescence occurred so long ago that all traces of the union are almost obliterated. The fact that we can so readily pull apart the lobes of the corolla, seems strong evidence that here the coalescence is of more recent date.

I do not mean to claim that the presence of the present perfected "pockets" can be wholly accounted for by the coalescence of the segments of the corolla, but this seems to have been the way in which they were initiated.

"All things work together for good," and so here, when the lobes of the corolla were becoming united, the anthers were naturally looking out for their own interests, and by persistent effort brought themselves in harmony with their changing environment.

They thus "lent a hand," perhaps, towards the perfecting of the "pockets." Or, naturally, those flowers in which the anthers tucked themselves away in the little "pockets," until the auspicious moment arrived, made the best use of their pollen in fertilization ; and so we have coalescence, primarily, as the origin of the "pockets ;" then, natural selection, and the agency of insects, have fashioned them into special contrivances for the mutual benefit of the flower and the visiting insect.

—Mrs. W. A. Kellerman.

Separate Sexes in Plants. — Mr. F. N. Tillinghast, Greenport, N. Y., observes : "Is not the separation of the sexes in monœcious and dicœceous plants supposed by many biologists to have been effected by a process of evolution ? And are not the hermaphrodite flowers, which are sometimes found on monœcious and dicœcious plants, regarded as survivals of, or reversions to, the original type of the flowers of such plants ? I think this view reasonable, as greater specialization and 'division of labor' characterize progressive development among plants as well as animals."

Mr. T. has correctly presented the views of some eminent biologists. But it is so easy to deceive ourselves by borrowed phrases. In human affairs a "division of labor" is sometimes an advantage, but it often has great disadvantages. So far as plants are concerned, no one can show any advantage gained to those plants which by "a division of labor" have come to have separate sexes in separate plants. On the other hand, many are at a clearly seen disadvantage. A mistake made by many evolutionists is in looking at the behavior of plants as being directed by self-interest merely. But the same wisdom that has life in one hand holds death in the other. Arrangements are provided with as much wisdom for the cutting off of individuals and of species, as for their introduction, and a short-time preservation. When one sees the great inconvenience and severe straits that plants are often put to, by reason of the separation of the sexes, we are as fully warranted in believing it a development in favor of an early destruction of the species, as that it is a development "progressive."

Self-sacrifice is as much an ordination of Nature as self-interest.

An Iron Tree.—Mr. W. E. Armstrong, Waco, Texas, sends an account, from a well-known serial, of a tree discovered in Africa by "a well-known professor," which only feeds on metal. The natives "worship it," and when they get any coins bury them as sacrifices beneath the ground around the tree, and which the tree feeds on. The trunk is like iron, the leaves like tin, and every part of it simulating some form of metal. The only surprise is that such intelligent magazines should be taken in by such transparent newspaper jokes. Every once in a while something like this is gotten up to the astonishment of the world, attributed, of course, to "the well-known German," Professor Moenshein, or some other equally well known myth. They are pretty to read, but hard to believe in.

Gymnogramma triangularis.—Mr. George Fraser, of Craigends, near Mount Tolmie, Victoria, B. C., writes that one of the prettiest little wild ferns in that vicinity is *Gymnogramma triangularis*. To those of us who only know this pretty fern from cultivated specimens it will have to be imagined what a beautiful element this little fern must be in the wild-flower scenery of that distant region of North America.

GENERAL GARDENING.

A SCENE IN PALMYRA.

Upon the palace colonnade
Beneath the bamboo's flickering shade.
High o'er a mass of foliage green,
With gorgeous tropic flowers between,
A fountain shoots its sparkling spray,
Weaving bright rainbows in its play.
Below, the water-lily spreads
Its flowers, like nymphs who lift their heads
To gaze upon a scene so fair,
And then, enraptured, linger there.

— Mary Bayard Clarke.

English Ivy on Trees. — Mr. John R. Hooper, of Richmond, Va., inquires if the English Ivy is injurious when running up the trunks of Red or White Oak trees, as they do occasionally in the vicinity of that city. The only cases of injury to the trunks of trees are when woody vines twine around the trunks. When vines travel perpendicularly in the same direction with the trunk they are a benefit rather than an injury. Nature has to make a special provision in every tree for getting rid of useless bark, and the roots of vines like English Ivy, all help Nature to get rid of this useless, dead bark,—and moreover, the shade, which the leaves of the English Ivy afford, is a direct benefit to the living bark. These remarks apply to all vines that grow perpendicularly up tree trunks. When, however, these vines reach the top of the trees, and spread over the branchlets, shading, and in any ways interfering with the healthy development of the tree foliage, then they are injurious. The English Ivy seldoms does this ; but the American Ivy,—that is to say, the Virginia Creeper, or *Ampelopsis virginica*, will often grow so vigorous as to entirely crowd out the leaves of the tree on which it grows. The grape vine will also do this, and many other climbers. It is only when they reach this mature state, that vines injure trees.

The Japan Orange.—It is said that hedges of *Citrus* or *Triphasia trifoliata*, the Japan Orange, can be made with the branches so close as to be absolutely proof against cats, dogs or rabbits.

Preparing Beds for Rhododendrons.—The rhododendron, when grown successfully, is one of the most beautiful of all ornamental flowering shrubs ; but under unfavorable conditions, it is exceedingly disappointing. It frequently occurs that sufficient care and forethought are not given to the preparation of the beds to receive it. The rhododendron possesses numerous small, hair-like fibers,—in fact it has no strong roots to speak of,—and these small rootlets require air as well as moisture and nutrition.

To prepare a bed such as the rhododendron will best flourish in, dig out the earth to a depth of three to four feet ; fill the bottom with stones, to afford good drainage, and the balance with good top-soil, sand and well-rotted cow or stable manure, all thoroughly mixed,—about one-half soil and one-fourth each of sand and manure. If the soil be partly or wholly of sod, it will be all the better with the addition of the sand. After the plants are set in the bed, the surface should be covered with from about four to six inches of stable manure. This acts as a mulch, and serves to keep the roots of the plants cool and moist during the heat of summer, and prevents frost penetrating deeply in winter, both of which will result in increasing the health and vigor of the plants.

Azaleas, kalmias, heaths, andromedas, and, in fact, all *Ericaceous* plants delight in a light porous soil ; and in planting them, the beds should be prepared in the manner as for rhododendrons.

Daphne Cneorum.—For plants with a low, creeping habit, none can surpass the beautiful *Daphne Cneorum*. For edging of rhododendron, azalea, or other beds of that character, or as a mass on a bank or partly shady spot, it is extremely useful. It delights in a loose, but rich soil, just as rhododendrons do, and in such a spot it will bloom through early summer and frequently again in the fall. The flowers are rosy pink and quite fragrant. *Cneornum* was once its generic name.

ENTRANCE TO GIRARD COLLEGE, PHILADELPHIA.—The Girard College, for orphan boys, in Philadelphia, is world-renowned. It is doubtful whether there is a better managed institution anywhere. It was founded by Stephen Girard, who came as a poor boy from Bordeaux, France, about 100 years ago. He had few early advantages, but managed to gain for himself an education as good as if he had been a school boy from early life. He took an active interest in good works, and when the population of Philadelphia fled to the suburbs on account of the fearful ravages of yellow fever, he remained behind and exposed his life in nursing the sick. He took charge of one of the fever hospitals, and when the scourge abated, found himself with 200 orphans on hand. It is believed that this experience led him to look forward to the institution which has made his name famous,—about two millions of dollars being left for the purpose. Though not a professor of any denominational religion, he was a liberal contributor to churches of every kind that applied for aid, though his sympathies were more within the lines of practical benevolence. Many stories circulate among old Philadelphians, illustrating this. One says, a man whose all was his horse and cart, met with an accident in which the horse was killed. Expression of sorrow and sympathy were abundant ; and one by-stander, saying to Girard how sorry he was, the old man remarked, "Yes, I am sorry five dollars ; how much sorry are you?"

For fear his college might be hampered by denominational influences, his will provides that no clergyman or ecclesiastic shall ever enter the building ; but the boys are to be taught sobriety and industry, and to be left to their mature years in their choice of denominational truths.

Some fifteen hundred orphan boys find a home here, until they grow large enough to care for themselves ; and it is one of the most remarkable facts of history, that rarely has a Girard College boy disgraced himself. The gardening of the college is under the charge of Mr. George Huster, and is a model of fitness and good taste. The ornamentation of the entrance, of which we give an illustration, is so inviting that even the prohibited clergyman is often tempted to try his fortune, in gaining admittance, though it is believed few escape the lynx-eyed cerberus who stands guard in the entry-way. Some amusing stories, probably some apocryphal, are told of the occasional mistake of the janitor spotting the wrong person, but being subsequently convinced of his mistake by the use of language, which, though scriptural, is not considered proper in every day use.

GROWING FLOWERS FOR PERFUMERY.—In connection with the subject of the growth of flowers, for perfumes, in France and Spain, the following interesting facts were recently given by a member of one of the largest firms of essential-oil distillers at Grasse, in the *Chemist and Druggist*. He states that the industry is still extending very largely in the south of France ; within the last ten years the area under this culture has trebled, in spite of the fact that in Algeria, in Spain, and in some other parts, the industry has also made great progress. The Pelargonium culture, however, which was the chief occupation of the Algerian distillers, is becoming less and less important in that colony every year, chiefly because the production in the Island of Réunion has taken away many customers from Algeria ; but Réunion in its turn is beginning to abandon the culture, as it has ceased to pay. The French Geranium-oil, however, is far and away the best, and so far as really high-class trade is concerned neither Algeria nor Réunion can compete.

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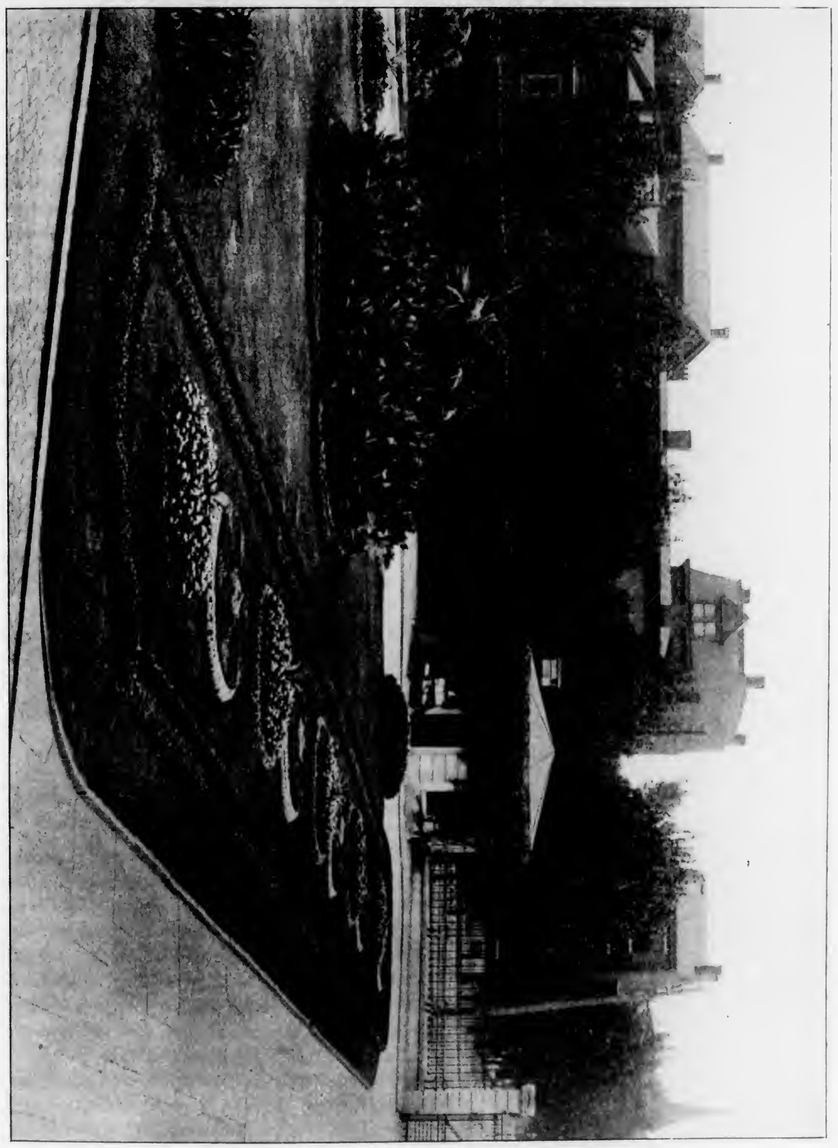

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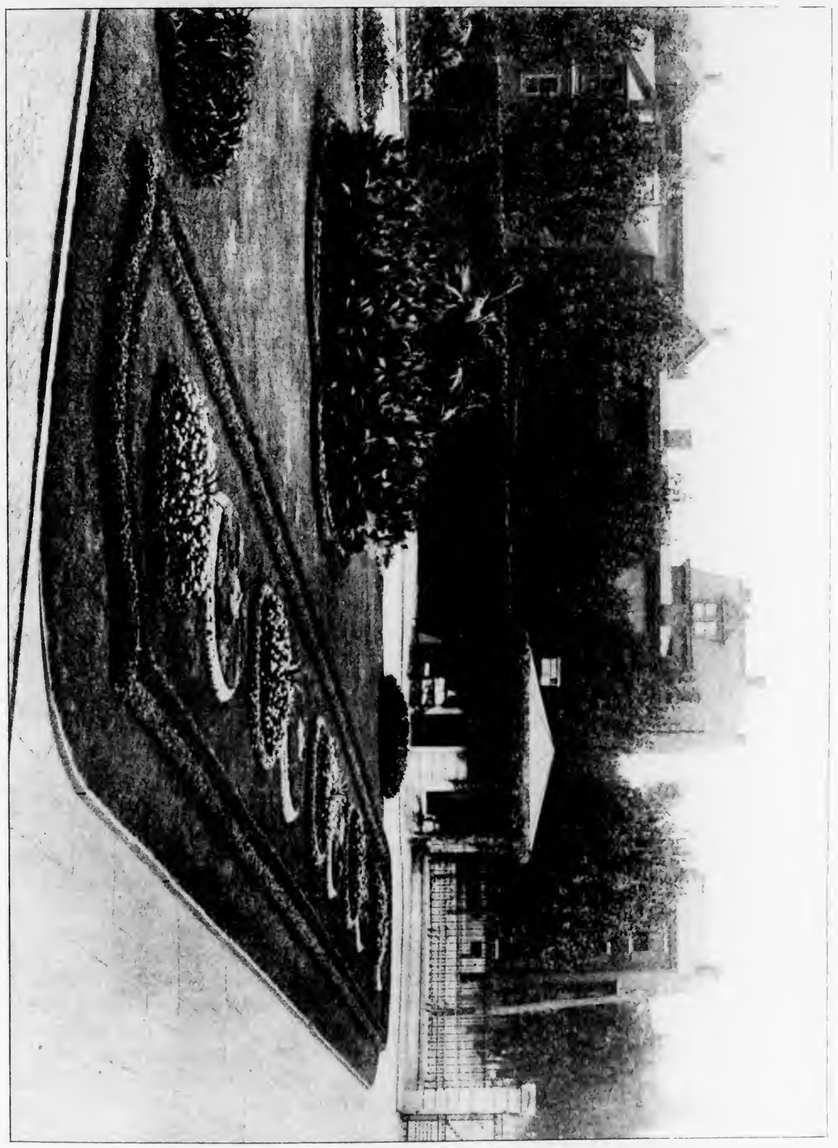
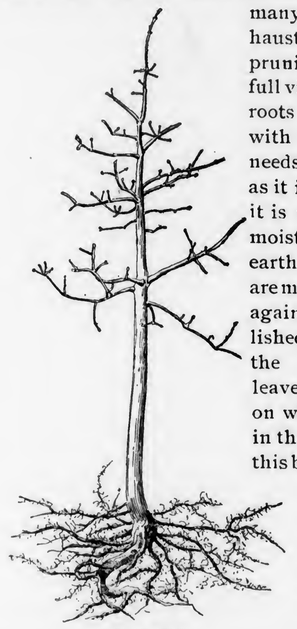


ENTRANCE TO GIRARD COLLEGE, PHILADELPHIA.

INTENTIONAL SECOND EXPOSURE

SCOLOPENDRIUM VULGARE. — Miss Ella K. Barnard makes the excellent suggestion that the Hart's Tongue Fern, *Scolopendrium vulgare*, is one of the best house-plant ferns there possibly can be. She has two specimens which are a "joy for ever" to all who behold them.

PRUNING NEWLY-PLANTED TREES —While it is often the case that trees that die after transplanting do so because the earth has not been packed in tightly about the roots, yet a great many fail from exhaustion from lack of pruning. A tree in full vigor has enough roots to supply it with all the sap it needs; but as soon as it is transplanted, it is unable to draw moisture from the earth until new roots are made, and the tree again becomes established. All this time the branches and leaves are drawing on what sap there is in the tree, and when this becomes exhausted, if new roots have not yet grown, the tree dies. This explains why trees die after they have pushed into leaf, and in fact, sometimes into growth. All trees need more or less pruning when transplanted, just how much depends a great deal on the tree to be pruned. A maple, poplar, birch or elm will do with very little pruning, while an oak, beech, chestnut, walnut or ash requires severe cutting. The roots that a tree has must also be taken into consideration. If it is well furnished with roots and fibers, it will require less pruning than if it has but a few stout roots devoid of fibres. In a general way, it may be said that hard-wooded trees require severe pruning, while those having a soft, sappy wood need but a light pruning. This does not always apply. A Pin Oak has very fibrous roots, as a rule, and moves quite easily without much pruning, though some will consider it advisable to do severe cutting even in its case. On the other hand, the larch, which has a very soft, sappy wood, but practically no fibres, and in fact, but little root, must be pruned closely, to get it to transplant well. The illustration shows what quantities of fibrous roots the Pin Oak has.



PIN OAK.

PRUNING SHRUBBERY.—I think your notes in the January issue of MEEHANS' MONTHLY, page 11, are well timed, and, I am sure, will do a lot of good. That they were needed, there can be no doubt to any one who knows anything about spring-flowering shrubs. Even in this city of beautiful parks, we see "wholesale trimming" of the worst kind go on.

Last spring I was pained to see the way whole shoots of flowering shrubs were cut away, which, in two or three weeks, would have been one mass of beautiful flowers, to the very tips of the same shoots. I cannot see why people will sacrifice the early-flowering shrubs so, unless it is done in ignorance.

I have seen shoots of *Forsythia*, three and four feet long, ruthlessly cut away, just three weeks before the time for them to be in their glory; and what is a more beautiful sight than a well-grown shrub of *Forsythia* in full bloom? And yet, owners of places submit to *professional "trimmers"* shearing away all this wealth of flower, and leaving, instead, a bush that, to me, has no beauty,—either a close, round head or some other hideous shape. This is true not only of *Forsythia*, but right on all through the various classes of spring-flowering shrubs. Everything is treated the same. It seems the people have the idea that the various shrubs *must* be pruned in the spring, which is a great mistake, and I am sure if they will just leave the shrubs alone, only cutting out all dead wood, they will be well repaid for their non-interference. When the various shrubs are in flower, we generally like a few sprays in our dwellings, and, in my opinion, this is the time to do a little pruning (not trimming). Let every flower spray that is cut be one shoot pruned, and when all the flowers are gone, go over and shorten back all straggly or extra strong branches, giving the bush a natural outline,—in fact, *assist Nature*, and don't destroy it.

P. BISSET.

Washington, D. C.

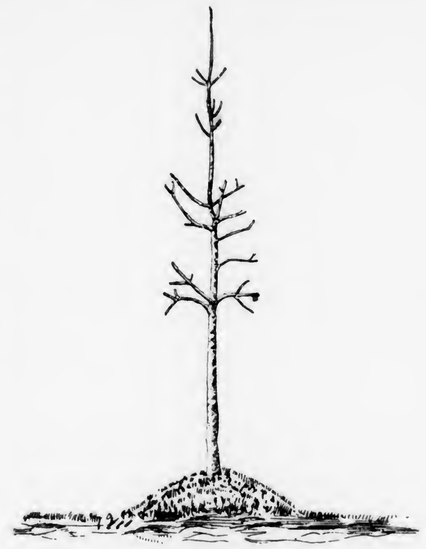
MAGNOLIA GRANDIFLORA AS A SOUTHERN STREET TREE.—In your February number of 1895, a New Orleans man asks about shade trees for that and other southern cities. The trees named in the article, except the Sweet Gum, have but few points to recommend them. 'Tis a strange thing to me that the finest of all the shade, a swell as ornamental trees, for New Orleans or any city south from the line of Tennessee, the *Magnolia grandiflora*, should be overlooked. It is an evergreen, and grows stately, tall and of beautiful proportion and appearance, besides having an array of bloom for about four months in the year. It grows in almost any soil, and with any reasonable training and care in youth, it forms a perfect tree, subject to no insect or ailment. In this city (Memphis, Tenn.) are an array of as stately and as lovely shade tree magnolias as ever an eye beheld; though only few of them are planted on the streets.

J. STEWART.

We have now two good street trees named for the South,—*Magnolia grandiflora* and the Sweet Gum. For the benefit of those who would tire even of Paradise itself, it would be well to add to this list.

BOX EDGING.—In many gardens the box edging is still an essential element in bordering; but it frequently gets too large to be convenient. In this case it is taken up and re-set, and the old plants are torn to pieces just so much as to leave a few rootlets to some of the branches,—then it is re-set so that three or four inches of the green portion is above the surface of the ground. This is best done in the spring of the year in those portions of the country where the ground is likely to freeze, because if done in the fall, it is apt to be drawn out in the winter season. As a general rule, people prefer to do all they can in the fall, although it may not be quite as well done as in the spring,—because spring always brings with it more work than can be properly attended to. Where there is such pressure, box edging can be laid in the fall; but in this case it is best to place straw, or some other material over it, in thin layers, and on this a little earth is thrown. This keeps it from being drawn out by the frost,—of course, the material must be taken off when spring comes.

PLANTING TREES IN HEAVY CLAY SOILS.—Every once in a while the attention of the conductors of this magazine has been called to failures in tree-planting in heavy clay soils. The reason of this is that the trees do not have sufficient drainage, and the water lies around the roots, excluding the air. Trees must have air at the roots in order to thrive, and it is only in loose soil that this can be obtained. Where it is impossible to secure drainage in soil of this character, the better way to plant is to loosen what little top soil there may be, set the tree on this, and cover over the roots with rich top-soil brought to the ground for the purpose. This will set the tree in a mound, and though the appearance of trees planted in this way may not be such as would be preferred, yet it is better than to have constant failures by planting in the heavy clay soil.



The value of this method was particularly noticed recently on a place where considerable planting had been done. All the deciduous trees were planted in the natural earth; but the beds of shrubbery and hardy herbaceous plants were set in mounds of top soil. There was scarcely a failure in any of the plants planted in these raised beds; but at least ninety per cent of the trees planted directly in the ground was dead.

NEW OR RARE PLANTS.

RUBUS SORBIFOLIUS.—There is little difference, botanically, between a strawberry and a raspberry. They are both of the genus *Rubus*. In the strawberry, the seeds are naked on the fruits,—in the raspberry, they are covered with pulp. When it comes to distinguishing a raspberry from a blackberry, where in both cases the seeds are covered by pulp, the manner in which the fleshy part falls, is the distinction. The raspberry falls off like a thimble,—the blackberry breaks off from the base, leaving a flat instead of a conical receptacle. *Rubus sorbifolius* is a species from the North of Asia, and so named by Maximowicz. It is not quite clear from a Chinese painting sent to us by Mr. Blanc, whether it will have to be classed as a raspberry or blackberry, though the bright scarlet fruit, held upright by the strong stalk, is more suggestive of a strawberry or raspberry than of any well known member of the blackberry family. Mr. Blanc suggests for it the garden name of strawberry-raspberry, to which there seems little objection. The leaves are thrice-pinnate, with an odd leaflet somewhat resembling in outline the leaf of the mountain ash, which has suggested the name *sorbifolius*. Its place in the American fruit garden will have to be tested. If not of high value as a fruit, it will certainly be a good addition to the lists of ornamentals.

CEPHALANTHUS OCCIDENTALIS.—The *Cephalanthus occidentalis* is commonly known as the Dwarf Button-ball. It is usually found in swamps and other damp places; but like swamp plants of every kind, with almost no exception, it thrives much better in dry ground than in its native place. There is quite a demand for it by ornamental planters, many thousands having been sold by leading nurserymen during the past ten or twenty years. They grow much larger in cultivation than in nature, and plants may frequently be seen seven or eight feet in height, covered with many hundreds of its sweet-scented, white heads of flowers. It is quite a favorite with insects; but for all their visits, it is adapted to self-fertilization.

PLANT ROOT INJECTOR.—SEE PAGE 75

NEW SPECIES OF LYCORIS.—China and Japan have furnished us with many beautiful trees, shrubs and herbaceous plants; but have not been particularly bountiful with bulbous-rooted plants; but of late, a number of species of *Lycoris* have been introduced. *Lycoris* is a genus very closely related to the Amaryllis. They are described as being particularly beautiful. *Lycoris squamigera* is said to throw up a flower stem to the height of three feet, and to have from four to seven large flowers of a pale satiny rose with a dash of cobalt, something resembling the old belladonna lily. *Lycoris sanguinea* is a dwarfer kind, growing a little over a foot in height, with about six flowers of an orange red color. *Lycoris aurea* is described as remarkably beautiful, having a head of from six to ten golden yellow flowers, produced in the fall of the year. *Lycoris radiata* is rather an old species, better known in the past as *Nerine Japonica;* but with its spike of pretty, pink flowers is well worth cultivating, although for some reason or another it is not as common in gardens as it was a quarter of a century ago.

NEW VARIETIES OF CARNATIONS.—Both England and America seem to have a growing admiration for the beautiful carnation, notwithstanding it has been for centuries a popular denizen of the garden. Over a couple of centuries ago it was used in chaplets to crown the statues of some of the Roman Divinities, and in this way obtained its classical name—"Dianthus," or "Flower of the Gods." Before us is a list of new varieties raised by F. Dorner & Son, of Lafayette, Ind. They speak of the Bridesmaid as a bright clear pink, with a flower from 2¾ to 3½ inches across; and what is very important to the American grower of cut flowers, it has a very strong, stiff stem. Another—the Meteor,—is described as a deep brilliant scarlet—also with strong stems, and flowers sometimes reaching three inches in diameter. Storm King is described as snow white, and so large as sometimes to reach 3 to 3¾ inches. The same firm sent out last year some very good varieties, especially Uncle John—a pure white. The Stuart—a geranium scarlet, E. A. Wood,—a variegated; and Goldfinch—a yellow one, edged with pink; but on our table also is an account of a variety named Uriah Pike, so named after the raiser, residing near London, England. It is remarkable to note how various are the grounds on which flowers will obtain popularity. In the account of the origin of this variety, it is stated that the Duke of York was going through some great horticultural exhibition when he saw this dark red carnation, and inquired of the President of the Society, Sir Trevor Lawrence, about it, and was told that it was a new variety,—whereupon the young Prince said, "Why, it is lovely! Carnations are my favorite flower." The account says that the Prince smelled it and at once fixed it in his button-hole,—which one might think a very natural thing to do even if it were not a prince who had received the flower; but still being a prince the variety is very much endeared. Possibly a smile of the President of the United States might encourage some raiser to believe that his productions were of a very high standard, but few would expect to see this smile recorded as among the flower's chief recommendations.

THE HARDY FLOWER GARDEN.

SEEDS WITHOUT FERTILIZATION.—Some years ago, Mr. John Smith, the curator of the Kew Gardens, had a plant of the Euphorbia family, which was wholly pistillate,—not another plant was known in Europe, and yet it produced perfect seeds. On this account, the plant being of a new genus, he named it "*Cælebogyne*,"—a Greek term representing this curious behavior. Peculiarities of this kind seem incomprehensible, and yet they are generally believed in by scientific men. Mr. David H. Day, of Buffalo, writes that he is quite sure a pistillate plant he has of *Thalictrum Fendleri* produces seeds, without being pollenized,—and the writer of this paragraph, one year, cut off all the pollen-bearing flowers of the Castor Oil plant, so that not a particle of pollen perfected, and yet the plant produced its complement of seeds. The whole experiment, however, can be so easily repeated, that it is much better to consider this result as only a possibility until further experiments have been made.

A DELIGHTFUL WATER GARDEN.—Among those amateurs who have taken a pride in growing aquatics, few have reached more glory than Mr. S. C. Nash, of Clifton, N. J. In his garden, last year, he had a *Victoria regia*, the famous water lily of the Amazon, which had no less than twenty leaves above the water, without crowding the undeveloped ones just below the surface,—the grand flowers opened freely under this general skillful culture. Mr. Nash has prepared a number of beautiful photographs of various scenes in his water garden, which he will send to any one desiring them, for the mere cost of the photographs. They will furnish some very excellent suggestions.

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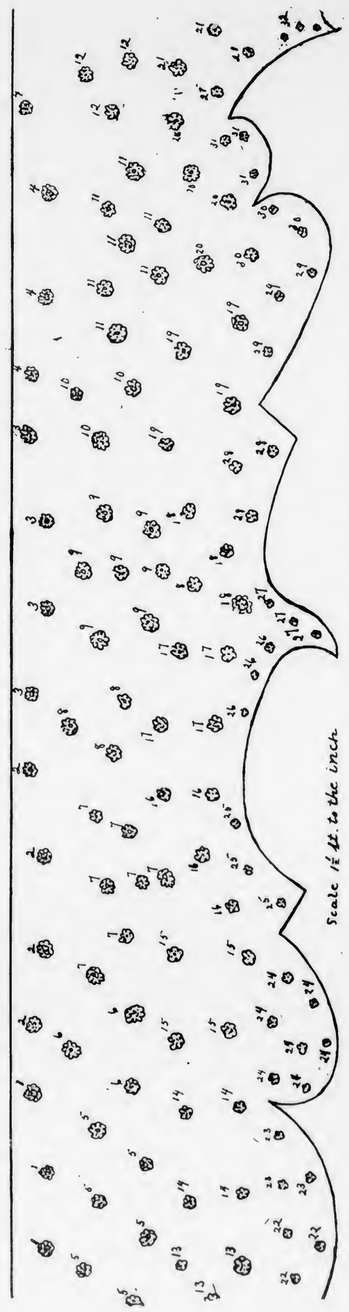
INTENTIONAL SECOND EXPOSURE



breviated list of choice sorts of a few years ago, has become a very lengthy one.

And this is as it should be, for surely no class of plants affords such a variety of color, both in flower and foliage, as do these. By careful selection of varieties, it is possible to have something in bloom from early in the spring until late in the fall.

The most effective beds of Hardy Perennials are planted in masses. Groups of three plants of one variety are quite effective, though it is perhaps better to use five plants of a kind, if the bed to be planted is a large one.

The accompanying plan is given to assist those who are not familiar with the habits, growth and time of flowering of the various varieties. The taller-growing sorts, attaining a height of about five feet, are grouped in the background, and are planted on an average of about eighteen inches apart, while the dwarfer sorts are planted in the front, about nine inches apart.

The plan represents a border on the edge of a lawn, with a line fence or a garden at the back of it; but the same plan can be used for a border along a walk, by making a straight line along the front, and filling in the vacant places with other dwarf-growing plants.

The sorts named in this list have been selected to give as great variety of color as possible, and at the same time, to produce as much bloom as possible from spring until fall. The following is the list called for in the plan. The reference numbers are also given.

Number on Plan.		Color.	Duration of Flowering.
1	Aster tartaricus,	Purple,	September, October.
2	Phlomis tuberosa,	Purple,	June, July.
3	Silphium connatum,	Yellow,	July, August.
4	Hollyhock (assorted),		July-September.
5	Aquilegia (assorted),		May-July.
6	Agrostemma coronaria,	Crimson.	June.
7	Vernonia angustifolia,	Purple,	August, September.
8	Heliopsis lævis,	Orange,	August, September.
9	Chelone barbata,	Scarlet,	July.
10	Lychnis chalcedonica,	Scarlet,	June-August
11	Monarda purpurea,	Purple,	August, September.
12	Physostegia Virginica,	White,	July.
13	Funkia Sieboldiana,	Blue,	July.
14	Hemerocallis fulva,	Reddish yellow,	June.
15	Campanula alba,	White,	July.
16	Betonica rosea,	Rosy pink,	June, July.
17	Lavendula vera,	Blue,	August-October.
18	Iris florentina,	White,	May.
19	Papaver orientale,	Orange-red,	June.
20	Rudbeckia incisa,	Yellow,	August, October.
21	Iris virginica,	Blue,	May, June.
22	Viola striatum,	Cream white,	May.
23	Dracocephalum nutans alpina,	Blue,	May-July.
24	Veronica rosea,	Pink,	August.
25	Sedum hybridum,	Yellow,	July.
26	Bellis perennis,	White and pink,	May.
27	Plumbago Larpentæ,	Purplish blue,	September, October.
28	Phlox procumbens rosea,	Pink,	May.
29	Sedum album,	White,	July.
30	Armeria maritima,	Pink,	May.
31	Viola cucullata,	Blue,	May.
32	Phlox procumbens alba,	White,	May.

FRUITS AND VEGETABLES.

A PLANT ROOT INJECTOR.—Directions for relieving young grape vines or other plants, the roots of which are infested by phylloxera or insects of any kind, are common; but good appliances for getting the poisonous solutions to the roots are by no means well-known. In the Bulletin 78, of the Entomological Division of the Cornell University Agricultural Experiment Station, a very simple and effectual implement is described and figured, which we have been kindly allowed to reproduce on page 72. It is called "The McGowen Injector," and the "Bulletin" thus describes its use:

"The method of inserting the injector is shown in the figure. The hole should always begin at a distance of 3 or 4 inches from the plant and run horizontally downward to a point little below the roots. To accomplish this, the injector must be inserted at an angle as shown in the figure. Force it down until you think the point is a little below the roots, then let out the charge of liquid. In operating the injector, first pull the piston up as far as it will go; this loads the measuring chamber between the valves; then push down the piston until it stops, and the instrument is ready to be pushed into the ground. Push it into the ground as far as desired, hold it there while you pull up the piston; by this operation you let the charge out of the lower chamber into the ground, and at the same time the measuring chamber is again filled. Hold the injector in the ground a few seconds after the piston has been pulled up, in order that all the liquid in the charge may have a chance to run out. Then pull the injector out of the ground, and quickly, with the foot, fill the hole with earth and step on it to pack it down. Press down the piston, and you are ready to treat the next plant. Never push the injector in the ground unless the piston is clear down, because if the lower end is not thus closed, it will immediately fill with soil, which is not easily removed."

DISEASES OF PEACH TREES.—Some years ago, a gentleman residing near Cincinnati created a sensation by what he regarded a new method of keeping peach trees healthy. All that he did was to pile up earth about the trees, the mound reaching up to the branches. It took several cart loads of earth to make these mounds, and the little orchard had the appearance of bushes growing out of the top of the cone of earth. Every one used to look on and laugh at the thought of burying up the trunk of a tree in order to make it healthy; but there were the trees, and undoubtedly models of health. Those who saw, simply stated their belief that it was only a coincidence, and that the trees would probably have been as healthy without the mound of earth as with it. Since, it has come to be well recognized that many of the diseases of plants, not merely of the peach tree, but of other trees, are caused by the mycelium of a minute fungus attacking the roots, it is not at all unlikely that this mound of earth operated beneficially, by preventing the growth of the fungus which preys on the roots of trees. It is now well understood that all plants of a low order of vegetation, which we know as fungi, will only grow under a peculiar combination of circumstances. Among other things they must be very near the surface of the earth, and if buried to the depth they would be under a mound, it is unlikely that fungi would find a satisfactory home. Some will say right here that they thought burying up the trunks of trees and covering the surface roots with earth was destructive to health; but the burying by itself is not the reason trees die when earth is piled over them to a considerable depth, but from the fact that the young, growing roots do not get air. These young, growing roots, are almost all at the extremities, and the mound of earth around the trunk would not in the slightest degree injure these outer roots. Whenever a valued tree is somewhat buried, it is customary to leave a space around the trunk, perhaps building a dry wall, in order to keep the earth from getting near the trunk; but this is not that the earth is injurious, but to give a chance for water to flow freely down into the soil, and the flow of water always leads to a flow of air following the water. These remarks are suggested by an article in an agricultural paper, stating that the apple borer and the peach borer have been kept out of the trunks of trees by making a mound of earth around the trunks

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THE PHYLLOXERA IN AUSTRALIA.—Baron Mueller says the dreaded Phylloxera has obtained a foothold in Australia.

SOWING PEAS.—It has been developed by the experience of intelligent cultivators during the past few years, that plants which require stakes or poles to grow on, have much more vigor and are in every way more healthy when they have these natural supports than when they are left to struggle along without them. The reason for this has been explained by Mr. Darwin, who shows that when a plant of a naturally climbing character has not found the support it desires, it continues twining and twisting in every direction for several days, and it requires nutrition to sustain this motion. When, therefore, they do not find supports, all this nutrition is wasted, This is well illustrated in the case of the garden pea. With a little brush-wood over which the pea plant can climb, it is amazing to note how rapidly the pea plant grows, and what heavy crops it will bear in proportion to plants which are left to straggle on the ground without stakes to twine upon. Wherever it is possible to obtain twiggy branches for the pea, it is very profitable to use them. There is quite an art, indeed, in staking peas,—they climb by little tendrils no finer than hair, which grow from the extremity of the leaf stalk. They cannot twine around a thick branch, therefore, the vegetable gardener who understands his business, when he is staking the peas, breaks off a few of the little slender twigs and puts them in the ground near the pea plant. In this way they get their first good assistance in climbing up the thicker portion of the pea-brush.

QUINCE CULTURE.— Prof. L. H. Bailey, of the Cornell University, has recently issued, in Bulletin 80, one of the most complete accounts of quince culture that we have met with for some time. Probably few persons have any idea of the great extent to which this fruit is being cultivated in western New York as a matter of commerce. T. C. Maxwell & Bro., of Geneva, N. Y., have a tract of about thirty acres, which is used expressly for growing this fruit for commercial purposes. Professor Bailey states that though the quince will grow on light soil, it will do best on heavy land, providing it be well drained. On account of the shallow roots, which are always near the surface, it is found best to keep the soil continually stirred about the trees. A heavy manuring is judicious.

The Maxwell orchard is fertilized chiefly with stable manure. Two-thirds of the annual growth of the trees are cut away each winter, —the branches left for fruit-bearing are shortened in. About three hundred trees occupy an acre, which gives them an area of ten by fifteen feet each. A bushel of fruit to a tree is considered a fair crop. The Maxwells sort their quinces, before marketing, into three grades,—the best grades are shipped in grape baskets of about a peck each, or in kegs holding a bushel, while the second grade is shipped in barrels or half barrels. They bring about two to two and a half dollars a barrel. The third grade, or "culls," are not very profitable. The Orange, the Champion, the Meech and the Rea are the principal varieties cultivated in the state of New York.

The leaf blight and the fruit spot are the chief enemies of quince culture. The brown spot on the leaf is caused by one of the species of microscopic fungus named *Entomosporium maculatum*. When attacked by this fungus, the leaves fall early, in which case, as with the pear and other fruits, the product is inferior in size and quality. In a perfectly healthy tree of any variety of fruit, the leaves should remain on, until their natural period of falling, in the autumn.

Spraying with the various copper solutions recommended is found to be a complete remedy against the attack of this or any other fungus. The quince borer would be very troublesome if not kept away from the plant ; but no good cultivator now is annoyed by this insect, as care and watchfulness prevent them from operating.

TRUFFLES.—Of all the delicious species of the fungus family the truffle probably heads the list. The writer believes he has seen a truffle of American growth in the long time ago, but not having met with one in more recent times, is inclined to believe he may have been mistaken. Has any one really seen a real American-grown truffle? In the Old World they are found chiefly in oak forests. Growing wholly underground they can only be found by the aid of dogs, carefully trained to scent them. The dogs indicate where they are, and the hunter digs them up. There is no reason why they might not be introduced, —but it is said it is difficult to get the dogs.

THE CABBAGE ROOT MAGGOT.—In olden times the husbandman felt that with scarecrows and a few mouse traps he was pretty well equipped for warfare against his garden enemies. When plants died it was mostly from "poor soil," "wet feet," "lightning," or the "providence of God." The microscope has revealed to him a new world mightier than the one Columbus found, in which both friends and enemies seem to be manifold. An observing youth, of the writer's acquaintance, sitting on an old cherry log "waiting for a train," pulled his lens from his pocket (no one goes without a pocket lens in these days) and investigated a piece of leathery lichen which he pulled from the log. He was surprised and delighted at the discovery of hundreds of miles (in minute insect measurement, of course) of roadways which an insect, almost invisible even through the lens, had burrowed through the lichen. Such liliputians are really the great enemies of the gardener. We cannot know too much of their habits and ways. Many a cabbage grower has found his plants to "go off in some mysterious manner," but Mr. M. V. Slingerland, of the Cornell University Experiment Station, brings out his microscope and finds no mystery about it. Annexed he gives a cut in which the enemy is plainly seen. The maggots seen in the picture are from the eggs of a small fly, which is named *Phorbia brassicæ*. In Bulletin 78. of the publication of this Station, is a history, —probably the most complete ever penned — of everything in connection with this pest. It occupies over 100 pages, and the beauty of it is that the book can be had simply for the asking.

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INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

NATURE'S COMFORTER.

If thou art worn and hard beset
With sorrows, that thou wouldst forget,
If thou wouldst read a lesson, that will keep
Thy heart from fainting and thy soul from sleep
Go to the woods and hills! No tears
Dim the sweet look that Nature wears.
—LONGFELLOW.

M. P. DUCHARTRE.—One of the most prominent of the botanists who make plant life a study—M. P. Duchartre—died suddenly in the second week in November, in his 84th year. He was editor of the *Journal of the National Horticultural Society of France*.

A YEAR'S WORK AT FORDHOOK FARM.—This little book, published by Atlee Burpee & Co., Philadelphia, illustrates and describes the work of a year on a large seed farm. Few have any idea of the great amount of care and watchfulness, aside from money capital, which it requires to keep in the advance in the seed business. The book is for gratuitous distribution.

JOHN JACOB THOMAS.—Mr. J. J. Thomas, author of *American Fruit Culturist*, and other books on rural affairs, died at his home at Union Springs, New York, on the 22d of February, in his 85th year. For nearly 60 years he had been editorial contributor to the *Country Gentleman*. Like most good men connected with editorial life, he had come to regard the impersonality of these positions, and to sink his own individuality in the work done. Had he been a writer of books, his good and useful work would have brought him among those famous "for all time."

JOHN H. REDFIELD.—The Botanical Section of the Academy of Natural Sciences of Philadelphia has, for the fourth time within the present year, had a visit from that grim reaper, Death,—this time gathering in the Conservator of the Academy's Herbarium, Mr. John H. Redfield, who died on February the 28th, from a light attack of influenza, in his 80th year. In many respects he was one of the most remarkable men who have ever done honor to botanical science. He was born in Connecticut, of parents comparatively poor, but who were remarkably acute observers of Nature. The early education he received in boyhood was in a Lancasterian school, which he left when twelve years old, for employment as an errand boy in a dry goods store. He spent his evenings in study, and particularly in learning languages, of which he was particularly fond. He became a fair master of Greek, Latin and French, and had some insight into German, to which, however, he did not well take. He kept up this taste, for the study of languages, through life—Italian and Spanish being mastered only in comparatively recent years. He left the dry goods store with much satisfaction, in his 18th year. His earliest tastes in science were in the direction of mineralogy and conchology; but as a member of the New York Lyceum of Natural History, he got acquainted with Dr. Torrey, and his then young student, Asa Gray, and he was led to botany. He always refused every honor in connection with his favorite pursuit, as he desired to be known only as a business man—a member of the firm of Whitney & Sons, the leading car-wheel manufacturers of Philadelphia. Retiring from business when he reached his 70th year, he gave all of his time to botanical work. The great Herbarium of the Academy of Natural Sciences, now in excellent condition and, mainly through his work, has about 35,000 species of flowering plants and ferns,—not by "estimation," as in so many cases, but by actual count. In the knowledge of ferns he was regarded as among the highest authorities. As a man, he was universally beloved. His main idea of Christianity was to do all the good possible while in this life,—few men more perfectly filled this ideal. By vote of the Academy, the writer has been detailed to prepare a memoir of this remarkable man; but he cannot forbear offering this brief tribute here.

TITIAN AS A LANDSCAPE PAINTER.—When my eye first rested upon the notes relating to this topic, in some back numbers of MEEHANS' MONTHLY, I had just been reading Sir Thomas Lawrence's emphatic testimony on the same point. The passage occurs in a letter written by the great English portrait painter in 1828, to a young artist then studying in Rome. "The best historical painters," he says, "have always been good painters of landscape,—and perhaps there are examples in Titian of a greater style in that department of art than can be found in the Poussins."

Lawrence's estimate of the great Venetian landscape seems a strange forecast of that of Ruskin given to the world from fifteen to thirty years later. Ruskin boldly declares Titian the "Master of heroic landscape." Whatever Nicolo Poussin, whom he considers incomparably the superior of Claude, had done, had already been better done by Titian. He dwells upon the "mossy leaves of the Titian forest." "We obtain the nobler effects on foliage," he says, "where the leaves are grouped concentrically, as in the chestnut." "So fondly and frequently drawn both by Titian and Tintoretto." Although the great art critic sees faultless models in the foliage of some Venetian portrait painters of lesser note, yet he concludes —"beside Titian and Tintoretto all landscape grandeur vanishes."

That Titian's landscape was most rarely drawn from Venetian localities may excite still more surprise. It is rather, Mrs. Jamison tells us, "the scenery of his mountain home, the scenery of Pieve di Cadore, that is reproduced in his works,—the towering cliff, the castle, the wild broken ground, the huge plane and chestnut-trees, with their great wreathed roots."

So it is not alone by the professed landscapist that the great verities of the material world are betrayed. With many, to cite Gainsborough as a landscape painter, might excite equal surprise with Titian. In spite of the celebrity of Gainsborough's portraits of ladies with hat and feather—the Siddons or the Duchess of Devonshire—his first drawing was a clump of trees from the Sudbury forest.

"What frankness and feeling in Gainsborough's landscapes!" exclaims Walpole, "which entitles them to rank in the noblest collections!"

"Portrait painting like the poet with two mistresses," says another, "had his visits, but landscape and music had his heart."

K. L. HAYDEN.

THE FOREST FLORA OF JAPAN.—It will be remembered that Professor Chas. S. Sargent took a journey to Japan a few years ago, expressly to study the forests of that interesting country. Through the *Garden and Forest* we have already had glimpses of what the Professor had seen in his interesting journey. It is now announced that the full results of this remarkable journey will soon be given to us under the title of "Japan Forest Flora." It will be an octavo work, matching the *Silva of North America*, and besides, the full description of the Forest Flora will be illustrated by twenty-six pictures of the trees of Japan. It will be published by Houghton, Mifflin & Co., of Boston, Mass.

RAFINESQUE.—The "Life and Writings of Rafinesque," which it was noted in MEEHANS' MONTHLY would soon appear from the pen of Dr. Richard Ellsworth Call, of Louisville, Kentucky, has at length come to the conductors' table. It contains all that has become known, and much more than has been written, about this remarkable but eccentric man, to whom, whatever may have been his peculiarities, the early history of natural history in our country will be perpetually indebted. Only a limited number of copies have been printed and a few extras are sold by the author, at $2.50 each.

CHARTS OF TREE LEAVES. — Miss Grace Anna Lewis, of Media, Pa., well known in connection with ornithology and botany, has prepared charts of leaves for public schools, where natural object lessons are in order. Nothing can be more perfect, or to the instructive point than these charts, as one might expect from one of Miss Lewis' ability.

SAMUEL W. HOOVER.—The founder of the famous Hoover & Gaines Nursery Company, Samuel W. Hoover, died on the 10th of March. He was a clergyman as well as a nurseryman, and died suddenly while preaching. He was a good man and universally beloved.

GENERAL NOTES.

AMERICAN OAKS IN THE OLD WORLD.—A recent writer in a French horticultural journal notes that American species of this grand genus are rarely seen in gardens or plantations, and with the exception of *Quercus rubra*, *Q. Phellos*, and *Q. macrocarpa*, which are met with in rare instances, are comparatively unknown.

APPRECIATION OF MEEHANS' MONTHLY.—The hard times are charged with being very severe on magazines; but the manner in which MEEHANS' MONTHLY is sustained is peculiarly gratifying. Not only are the subscriptions promptly paid, but are accompanied by letters of praise of the work, which is extremely gratifying to all concerned. The young men of the firm, to whose ambition to be useful the magazine owes its birth, are particularly pleased with these substantial evidences of its success.

DESTRUCTION OF FOREST TREES. — Mrs. Seliger notes in the Hartford *Daily Times*, that when criminals are sent up to the House of Correction, they are employed in cutting down the old trees in the enclosure. In other cities the criminals are employed in breaking stone, or similar work; but it does seem strange that they should be employed in the destruction of forest trees when the public feeling is generally the other way. The usual thing to do would be to send to the House of Correction those who cut down forest trees without good reason.

THE GIANT GRAPE-VINE AT HAMPTON COURT.—A correspondent who recently visited Hampton Court Palace, near London, states that the figures given in a recent number of MEEHANS' MONTHLY in regard to the wonderful longevity, and still remarkable productiveness of this grape-vine, were not in the least exaggerated. He found that this one single vine covered an area of thirty by seventy-five feet, every part of it being in the healthiest possible condition, and every part of the vine bearing a bunch of fruit. Twelve hundred bunches was certainly a moderate estimate.

CHARLESTON PUBLIC PARK.—The city park movement seems expanding everywhere — Charleston, South Carolina, is the latest to fall into line, having purchased a site embracing 500 acres.

MEEHANS' MONTHLY AS AN EDUCATOR OF BOTANISTS. — A correspondent kindly says when renewing his subscription, "I have great pleasure in mentioning that use of the magazine has aroused quite an active love of Botany among some of my summer neighbors. I believe that the young ladies have found almost all of the rich flora growing within a few miles of Elberon, through the encouragement furnished by the magazine."

SMALL PARKS.—*The Call*, of Newark, N. J., gives in detail some interesting matter connected with the proposed great park in Essex County. Just as it occurs elsewhere, the Park Commission is finding many legal obstacles in the way of success. One point made by a speaker we can heartily endorse; it was stated by some applicants of the park that the better plan was to secure it in some out-of-the-way place, so that it could be purchased at small cost, and then improved in the far-away future, and the reply was that the present generation which paid for these properties, has some right to some of the enjoyment. This was found to be the case with the Philadelphia movement twelve years ago. The thought then was, to place a large number of parks on the city plan, in order to get possession of them in the future; but it was found by experience that no sooner was a little park plotted than the pressure to take it at once immediately arose, and as the financial question could not be ignored, the result has been that instead of placing a few secured plots on the city plan, some three or four only are placed on the plan annually, and these are taken possession of by the city within a year or two afterwards. Judging from experience this must be the plan to be pursued by all municipalities.

BAPTISIA TINCTORIA.

FALSE INDIGO.

NATURAL ORDER, LEGUMINOSÆ.

BAPTISIA TINCTORIA, Robert Brown.– Glabrous, branching; leaves subsessile; leaflets small, roundish-obovate, acute at base, very obtuse at apex; stipules setaceous, caducous; raceme loose, terminal; legume subglobous. A plant with bluish green foliage, frequent in dry soils, Canada and United States. Stem very bushy, about 2 feet high. Leaflets about 7 lines by 4 to 6 lines, emarginate; petiole, 1 to 2 lines long. Flowers, 6 to 12 or more in each raceme. Petals, 6 lines long, yellow. Legume about as large as a pea, on a long stipe, mostly 1-seeded. (Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern States*.)

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FORCHHAMMERIA PALLIDA.—Those familiar with the beautiful genus Croton, as it appears in ornamental gardening, may have some idea what the leaves of *Forchhammeria Watsoni* look like. The genus has been classed with that to which croton belongs, *Euphorbiaceæ;* but Professor Rose, of the United States Herbarium, who, in Vol. I, No. 9, of the "Contributions" to that department, describes the species for the late Dr. Sereno Watson, has a doubt of the propriety of placing it there. By the permission of the Department of Agriculture, we give an illustration, on page 89, of this remarkable tree, for the double purpose of showing what a singular apple-tree-looking head an ally of the croton can assume; and that some idea might be had of the arboreal character of Mexican scenery—usually so very unlike our own. It was discovered by Dr. Palmer in Guamas, Mexico,—and at low elevations in the cape regions of Lower California,—where it had previously been found by Mr. T. S. Brandegee.

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IRIS CUPREA.—In the notice of *Iris cuprea*, in the April issue of MEEHANS' MONTHLY, note is made that *Iris cuprea* had been named by the *Botanical Magazine* a little while before as *Iris fulva*, and that Pursh may have had some good reason for not accepting the name. A correspondent suggests that justice may not have been done to Pursh by the *Botanical Magazine*. In preparing a book, the manuscript is written often long before publication. In preparing a magazine article, it is usually written and published at once. Pursh's description was no doubt in manuscript before the *Botanical Magazine* article was thought of. The author, in all probability, knew that such a work was about to be published, and equity would suggest that inquiry in that quarter should be made. The similarity in the language quoted, indicates that some search had been surreptitiously made, and the credit deliberately stolen from Pursh, and the change from Enslen to Lyon deliberately made to cover up the theft. Supposing that this may have been the reason why American botanists have always adhered to Pursh's name, our correspondent thinks they are justified.

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THE IRRITABILITY OF THE SENSITIVE PLANT.—Mr. R. J. Mendenhall, of Minneapolis, says "What makes the sensitive plant fold its leaves when touched, and drop its branches, and yet does not do it from the wind's action? I think it in its way understands just as well as the incubating dove that leaves its nest and in a crippled and disconsolate manner leads the intruder away, &c."

Attempts have been made to explain the phenomena; but the fact that eminent men continue to try to explain, shows that nothing has been developed that commands universal assent. A pretty experiment is to pinch with the thumb-nail the end pinnule of the leaf of the sensitive plant; but so lightly as not to shake the leaf. The pinnules fall one after another like a row of bricks falling when one is taken away. No explanation given will fit in with this curious fact.

———

RIBES ACERIFOLIUM.—Under the name of *Ribes acerifolium*, Mr. Thomas Howell describes, in *Erythea*, a new currant found on Mounts Hood and Adams, and also near the mouth of the Columbia River. He thinks it must have been collected before, but referred to *R. leptiflorum*. But that may be known at once, aside from other characters, by its red fruit. *R. acerifolium* has black fruit.

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IRIS CUPREA.—In the notice of *Iris cuprea*, in the April issue of MEEHANS' MONTHLY, note is made that *Iris cuprea* had been named by the *Botanical Magazine* a little while before as *Iris fulva*, and that Pursh may have had some good reason for not accepting the name. A correspondent suggests that justice may not have been done to Pursh by the *Botanical Magazine*. In preparing a book, the manuscript is written often long before publication. In preparing a magazine article, it is usually written and published at once. Pursh's description was no doubt in manuscript before the *Botanical Magazine* article was thought of. The author, in all probability, knew that such a work was about to be published, and equity would suggest that inquiry in that quarter should be made. The similarity in the language quoted, indicates that some search had been surreptitiously made, and the credit deliberately stolen from Pursh, and the change from Enslen to Lyon deliberately made to cover up the theft. Supposing that this may have been the reason why American botanists have always adhered to Pursh's name, our correspondent thinks they are justified.

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THE IRRITABILITY OF THE SENSITIVE PLANT.—Mr. R. J. Mendenhall, of Minneapolis, says "What makes the sensitive plant fold its leaves when touched, and drop its branches, and yet does not do it from the wind's action? I think it in its way understands just as well as the incubating dove that leaves its nest and in a crippled and disconsolate manner leads the intruder away, &c."

Attempts have been made to explain the phenomena; but the fact that eminent men continue to try to explain, shows that nothing has been developed that commands universal assent. A pretty experiment is to pinch with the thumb-nail the end pinnule of the leaf of the sensitive plant; but so lightly as not to shake the leaf. The pinnules fall one after another like a row of bricks falling when one is taken away. No explanation given will fit in with this curious fact.

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RIBES ACERIFOLIUM.—Under the name of *Ribes acerifolium*, Mr. Thomas Howell describes, in *Erythea*, a new currant found on Mounts Hood and Adams, and also near the mouth of the Columbia River. He thinks it must have been collected before, but referred to *R. laxiflorum*. But that may be known at once, aside from other characters, by its red fruit. *R. acerifolium* has black fruit.

ACTIVITY AND REST IN PLANT LIFE.—Nothing is probably more remarkable in plant life, than the fact that some portions of an individual plant will rest after active growth, while other portions that will rest at another time, may be growing freely. Some of the Mammillaria section of the cactus family, for instance, will have their ovaries fertilized, and then have them rest for a year. Twelve months

afterwards, this fertilized ovarium will push up in a single night to full stature, and present its scarlet fruit to our admiration. Oaks, pines and other things have their ovaria rest in the same manner; and this is true of leaf-buds, or flower buds, as of seed vessels. All must have noticed the Blazing Star (*Liatris*) make flower buds along the main stem, which rest after getting to the size of peas. But when the stem has reached its ultimate length, the active force goes to the buds, and they open from the top downwardly. This is true of nearly all—probably quite all,—plants of the order compositæ, though not noted so palpably as in *Liatris*. But nature seems never to have any absolute rule. There are always some exceptions. In a pretty autumn flowering herbaceous plant, *Aster tataricus*, both the ordinary system of continuous growth as the flower stalk advances, and a rest for a time, and then a downward activity may be seen on the same flower stalk. The annexed cut illustrates this. In the upper portion of the flower stalk, the buds rested when half grown, but are now opening from the top downward; but the lower portion has started the flowers, which have had a rest from below, upward. In other words in *Aster tataricus*, the inflorescence is both centrifugal and centripetal.

IS "BAMBOO" WOOD?—In a question relating to umbrella canes, Judge Coxe, of the New York United States Court, has recently decided that a bamboo handle and cane for an umbrella, is a grass handle, and not a wood handle. The matter is important in connection with dutiable articles. A bamboo stem is constructed of woody tissue, just as ordinary wood is, and serves as wood in many ways. It would be difficult for the Judge to show any organic distinction; and yet no one would regard a grass as wood. The judge is therefore both right and wrong. But such questions are continually arising in every direction. Is a melon a fruit? "Yes," all would say, and yet it would be difficult to describe a melon as a fruit, in such a way that it would not apply equally to the cucumber or squash. The tomato and other things of a like nature, are in the same questionable class. A friend came nearly having the last word when he contended that a fruit was that which was produced from a woody parent—a tree or shrub,—all others he would class as vegetables,—but the pineapple and banana made him hesitate. The fact is, nature has no dividing line anywhere, and it is no wonder that the Springtown Debating Society could not settle the question "whether the goose that laid the egg, or the hen that hatched it, was the mother of the gosling." In these cases, judicial decisions must guide.

FOREST FIRES.—MEEHANS' MONTHLY contends that no amount of policing, legislating or newspaper invective will prevent forest fires, so long as dead underbrush is allowed to accumulate. The *New Jersey Forester* quotes Mr. Fernow as an authority against this. The undergrowth is useful in aiding the collection of moisture in the soil. But the underbrush that is alive among the dead material gets its share of this accumulation; and aside from this, of what advantage is it to us that the tree gets moisture, if it is to be food for a forest fire at last.

ENGLISH'S "EVENING ON THE WISSAHICKON"—The valley of the Wissahickon has been pronounced the "prettiest, though perhaps not the most beautiful" piece of natural scenery in the United States. It is a nice distinction to make between pretty and beautiful. Whatever it may be æsthetically, it is classic ground to the botanist, for here Nuttall, Pursh, Rafinesque, Barton, Kalm, and many of the earlier botanists of America, received their earlier floral impulses and experiences.

EVENING ON THE WISSAHICKON, PA.
(By F. F. English.)

Messrs. Prang & Co., of Boston, are issuing facsimile colored prints of pictures by famous artists, and among them is one by F. F. English, called "An Evening on the Wissahickon," a miniature engraving of which they have kindly permitted MEEHANS' MONTHLY to use. It represents a scene on the upper region of the Wissahickon, where it waters Montgomery County farms, before entering the rocky defile with which are connected so many botanical associations and petite beauty.

THE MEDICINAL VALUE OF BAPTISIA TINCTORIA.—For medicines, Baptisia tinctoria has been found very useful. All medical writers, from Rafinesque down, have much to say about it in this connection. Rafinesque, however, gives, in a few words, the substance of most that has since been said of it: "It is a valuable remedy for all sorts of ulcers,—must be used externally as a wash or fomentation, or in poultices with lard or cream." "It is one of the most powerful antiseptics in putrid disorders." "It stops gangrene, and is useful in putrid and typhus fevers" Griffith says, "a decoction is made by steeping an ounce of the root in a pint of boiling water."

GROWTH OF FOREST TREES IN AMERICA.—Whenever the time shall come that the raising of timber trees will be profitable, it will be found that timber can be raised much more rapidly than the public generally believes. On the grounds of the writer of this paragraph, a very large number of forest trees were planted, about a quarter of a century ago, especially to test their relative ratios of growth. To day a Black Oak, *Quercus tinctoria*, was measured two feet from the ground and found to be three and a half feet in circumference. Other species of oak have grown more rapidly than this; but others have not grown quite so fast, and this is taken as the average growth of an oak in twenty-five years. Other trees belonging to the elm, maple and poplar families would make trunks very much larger than this in the same time. It is safe to say that in America a forest properly planted and cared for would make magnificent timber within half a century. The oak, is by no means a slow grower.

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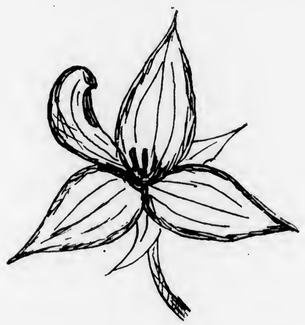
INTENTIONAL SECOND EXPOSURE

A MALFORMED TRILLIUM.—The members of the Trillium family are quite inclined to variation in the structure of their blossoms, and are, therefore, of much interest to the student of vegetable morphology. *Gray's Manual* remarks that "monstrosities [of these plants] are not rare with the calyx, and some timesthe petals, changed to leaves, or the parts of the flower increased in number." I have found specimens of the white trillium with more than the usual number of perfect petals, and others have been recorded in the pages of MEEHANS' MONTHLY. The drawing, herewith, of a blossom of *Trillium erectum*, at present open in my greenhouse, will give a hint as to how this in-



crease of parts is sometimes brought about. In addition to the three petals, there is another of the same color and texture, but of a different shape, and this latter bears an anther, on the side, which actually produces pollen. Upon counting the stamens, I find that there is one missing, and in its place grows this monstrosity, one-half of which is petal, and the other half stamen. Since trilliums are now in demand for winter blooming, the dealers will doubtless soon have a double variety on the market.

WILLARD N. CLUTE.

Binghamton, N. Y.

This beautifully illustrates one of the laws of vegetable morphology, that the whole plant is constructed of a few elementary parts, which may eventually take on the various characters which we denominate organs. In this trillium we see that there is no elementary difference between a stamen and a petal. A difference in the growth-energy produces the ultimate condition. Vegetable morphology is an interesting study.

LIFTING POWER OF ROOTS.—A Tennessee correspondent, signing himself "One curious to know," makes the following inquiry:—

There are here in the street side-walks, which are paved with very heavy flag stone, shade and *Magnolia grandiflora* trees from twenty to thirty years old. The stones weigh from fifty to two hundred pounds each, and many over that, yet the roots of these trees, especially the magnolia, raise the flag and curb stones high, as if by hand or lever power.

Now, wherein is the power."

The exact nature of these lifting powers has not been accurately determined, so far as the conductors of this magazine know. The immense power, however, has long been recognized. A mushroom has been known to lift a heavy paving stone in one night; but after all, this lifting power is not much greater than the sustaining power of the branches themselves. It must have often occurred to observers that the leverage possessed by some of the horizontal branches of trees must be enormous. Just in sight of where this paragraph was written, is a horizontal branch of elm, extending at least thirty feet, and not more than three inches thick at the point where it starts from the main branch. The weight of the smaller branchlets which this has to sustain is probably not less than one hundred pounds. Yet it has taken that horizontal direction for some four or five years, and is still not an inch out of its horizontal line. There is a fine field for original discovery in this direction.

THE PERSECUTED CROW.—Dr. Abbott has these kind words for the crow:

"Everybody knows the bird at sight, and supposes he knows the details of its mind, body and estate; but here 'everybody' is mistaken. The ornithologist knows the bird; but the public do not. All that can be said against it is rolled as a sweet morsel under the tongue; but who has spoken in its favor? The Farmers' Clubs throughout the land, and the State Legislatures and like learned bodies may declaim and enact as they see fit, but the truth remains the truth. The crow *is* a useful bird in spite of the mischief of which he is guilty." And what is said of the crow by Dr. Abbott may be said of other things of which people complain. Evils are not unmixed.

GENERAL GARDENING.

COURAGE.

"Give me the pear," Zenobia said,
And proudly raised her queenly head,—
"It ripens late, is not all sweet,
Yet 'tis the fruit which I would eat:
It hangs on high,—not like the peach,
On lowly boughs that all may reach,
And he who'd pluck a ripened pear
Must bravely do, and boldly dare."

—MARY BAYARD CLARKE.

PRUNING TREES IN SUMMER TIME.—The reader will remember what has been said about the pruning of trees during the winter months; but if a tree be properly pruned during the summer season, there is really very little for winter pruning to accomplish. It is the strong, vigorous growth of trees that takes the nourishment away from the weaker growth. In ordinary garden language "strong shoots or sprouts on trees are robbers," and they should be pinched back or pulled off; the vigor of the tree is then thrown into the weaker shoots. In this way, any part of a tree that is naturally weak, can be made strong. This point can be illustrated by the way in which street trees are trimmed. They are usually cut in the winter time, the chief reason being that at that time there is little work for men to do, and it is natural to recommend, as the best time, that in which they can find employment; but it must be within the experience of everyone, that the branches shoot out all the stronger at the point where the tops are cut away, by reason of the cutting away of these tops, and the lower branches that we wish to strengthen become still weaker. This must be frequently experienced, but if after a tree has been trimmed, in winter, in the manner referred to, these strong sprouts, which in summer follow the cutting, were pulled out after they had grown a few inches, the sap would then be thrown into the lower branches. In this way, the winter pruning would not be so injurious; on the contrary, it might in many cases bring about what is so much desired, namely, a strengthening of the lower shoots. This summer pruning is especially effective with coniferous trees. In the case of pines, we know that in the spring time, three or four branches push out at the end of last year's shoots, looking like gas burners. The central one is very vigorous and those on the sides are weaker. If we pinch out the point of the stronger one, the sap at once flows into the weaker ones, and they become strong, and new buds form at the place where the strong one was pinched off. Next year this bud continues the growth of the branch almost as straight as if it had never been pinched back. We can pinch off the terminal bud of the main stem, a new bud forming a leader without any bend. One who understands this business of summer pruning an evergreen can so manage that the tree forms an absolutely perfect specimen from the ground to the top, no one branch being any stronger than the other. The chief thing to remember is that in summer pruning the weak branches of the shoot should not be touched, it is only the stronger ones that require checking.

THE DWARF JUNE-BERRY.—A dwarf June-berry, or variety of *Amelanchier botryapium*, is in cultivation, and well deserves the compliment paid by E. E. Bogue, who says:

"We have, growing, an *Amelanchier* transplanted from near a swamp about three miles away. It is only two or three feet high, and would, I think, make a desirable plant in any collection. The fruit of last season is not yet fallen."

CURE FOR THE BLACK SPOT IN ROSES.—The *American Florist* gives the following as a sure cure for the fungus disease known as the "black spot" in roses:

"Take 4 ounces of copper sulphate ('Blue Stone') to one gallon of *hot* water, and after the solution has cooled, add 4 fluid ounces of ammonia and five gallons of water. Mix in a wooden or earthenware dish, as a tin pail would become coppered."

BOUGAINVILLEA GLABRA. — This beautiful greenhouse flowering shrub from Brazil, of a climbing, or rather scrambling, habit is well suited for the decoration of the conservatory, or for cutting,—potted plants bearing stems three to four feet long, wreathed with showy, rose-crimson flower bracts.

To florists, for decorative purposes, it is very useful. The variety *Sanderiana* is said to be more free flowering ; but by following the method of culture here described, we have succeeded in flowering small plants in 4-inch pots. For the decorator, plants in 10-inch or 12-inch pots are more desirable. The plant is readily propagated from cuttings of the young wood.

Many people complain of the difficulty of flowering bougainvilleas, and as we are rather successful with this beautiful greenhouse flowering shrub, perhaps our method may interest your readers. About the middle of May the plants are pruned back into shape, planted in the garden in a rich, well-prepared spot, and liberally watered all through the summer. They are taken up and potted into as small pots as convenient, about the middle of September, and placed in a cool house, given very little water, only as much as will keep them from shrivelling too much. About February 1st they are brought into a warm house and watered liberally, and, as they commence to grow, receive a large allowance of liquid manure. They are generally, with us, objects of beauty by Easter. The whole secret of success is in the lifting and potting of them into as small pots as you can, which gives them a necessary check ; and keeping them in a cool house, and dry, gives them a necessary rest, without which this plant will not flower, but keep on growing. When they are planted in the greenhouse it is necessary to root-prune them and keep them dry three or four months before you want them to flower.

WM. FITZWILLIAM.

Baronald, Orange, N. J.

A TALK ABOUT WEEDS.—The definition given, in MEEHANS' MONTHLY, of a weed, as being simply a plant which grows where the cultivator does not desire it, has been generally accepted as a proper one. It might be as well to give some account of a few of the more persistent intruders. Though all have botanical names, they are ashamed to be known, and try to hide their identity under various obscure cognomens. The *Galinsoga* is an exception. This Mexican weed is now widely spread over North American cultivated ground. It belongs to the composite family, has small, yellow heads, with from two to five rather broad and short ray petals. It grows rapidly on a hot summer day ; but like all annuals is easily kept down when an industrious cultivator is on hand. The most troublesome to the gardener, is the chickweed. Though it grows, flowers and seeds even when the ground is frozen solid, provided there be a few days of warm sun, it does not mind the hottest weather, and has managed to make a home for itself all over the cultivated portions of the earth. Besides its perpetual seeding, it increases by rooting runners, any little piece of which will establish a colony. Though it does not despise poverty, it is fond of luxurious living, and if it can get on a rich, cool and moist piece of ground, it will defy the cultivator to eject it. No weed requires so much watching. Eternal vigilance is the price of freedom from this pest.

Most annual weeds in gardens are not troublesome if taken in time. They flower early, and mature seed early, usually before the gardener, pushed by spring work, gets a chance to cut at them. But the plant does not care what becomes of its stalk after the seeds have fallen. When the weather cools, the seeds grow, and plants are on hand by winter, ready for spring growth and flowering. Among these may be named the different species of Dead Nettle, Shepherd's Purse, Whitlow Grass, Rock Cress and some others less common. The coarse, annual ones that start in spring, and flower and seed during the summer and autumn, are not troublesome, unless perhaps the Purslane be excepted. This cannot be killed by the hoe or the cultivator, unless when the plants are very young. Its succulent stems refuse to die, and will mature seed as well without roots as with them. These summer annuals along the Atlantic slope are chiefly Wild Buckwheat or Knot Grass, Devil Weed or Viper's Bugloss, Tick Seeds or Devil's Needles, Wild Carrot, Wild Chamomile, Cockle-bur, Rag Weed, Jamestown or Jimson Weed, Lamb's Quarters, Spanish Needles, Rich Weed, the English Sow Thistle in many places, and some annual grasses. The greatest enemies are, however, the perennial rooting intruders.

LICORICE.—Mr. Henry N. Rittenhouse, in the February issue of the *American Journal of Pharmacy*, calls attention to the licorice root in the United Sates. If it could be cultivated in this country, it would be enormously profitable. No less than eighty millions of pounds a year are introduced into this country on an average, while the consumption increases yearly. Attempts have frequently been made for several generations, to cultivate it successfully in this country, but all seem to have failed ; but in a country of such immense extent as ours there ought certainly to be many places in which it would succeed well. A small experiment last year, in the Meehans' Nurseries, resulted in having the leaves of the plants burned badly during the hot summer months, and the lesson from this would probably be that a higher altitude would produce better results. Mr. Isaac Lee, of Florin, near Sacramento, Cal., grew several acres of it successfully, in 1886, but abandoned it, it is said, for want of a whole market. This is generally the experience with all persons engaged in introducing new products. Buyers usually are reluctant to give up commercial connections already formed, for new ones that may be of doubtful permanence. There ought always be some understanding between a grower and some manufacturer or merchant, that the stock will be taken if it can be successfully produced. If it is a fact that it will grow healthful in the vicinity of Sacramento, a wide-awake horticulturist of that region ought to take hold of it, as they have of other matters of a similar character, and make it a success. It was for a long time thought that the preparation of raisins from the grape would never be a commercial success in California ; but every one knows better to-day.

FORCHHAMMERIA PALLIDA.—SEE PAGE 83.

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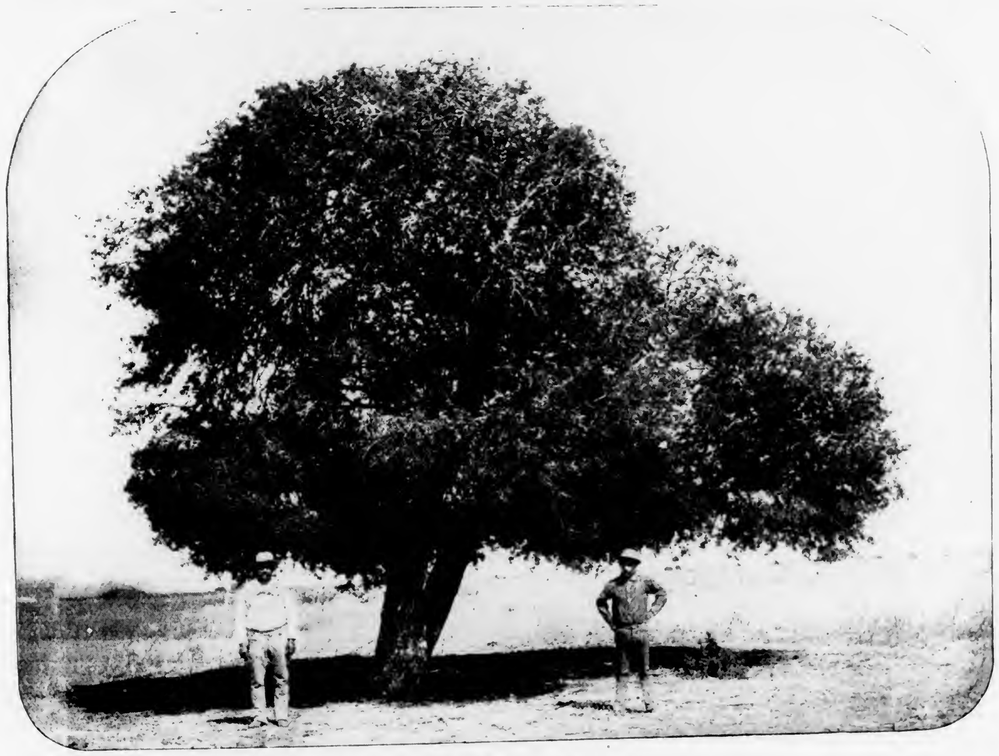
Baronald, Orange, N. J.

A TALK ABOUT WEEDS.—The definition given, in MEEHANS' MONTHLY, of a weed, as being simply a plant which grows where the cultivator does not desire it, has been generally accepted as a proper one. It might be as well to give some account of a few of the more persistent intruders. Though all have botanical names, they are ashamed to be known, and try to hide their identity under various obscure cognomens. The *Galinsoga* is an exception. This Mexican weed is now widely spread over North American cultivated ground. It belongs to the composite family, has small, yellow heads, with from two to five rather broad and short ray petals. It grows rapidly on a hot summer day ; but like all annuals is easily kept down when an industrious cultivator is on hand. The most troublesome to the gardener, is the chickweed. Though it grows, flowers and seeds even when the ground is frozen solid, provided there be a few days of warm sun, it does not mind the hottest weather, and has managed to make a home for itself all over the cultivated portions of the earth. Besides its perpetual seeding, it increases by rooting runners, any little piece of which will establish a colony. Though it does not despise poverty, it is fond of luxurious living, and if it can get on a rich, cool and moist piece of ground, it will defy the cultivator to eject it. No weed requires so much watching. Eternal vigilance is the price of freedom from this pest.

Most annual weeds in gardens are not troublesome if taken in time. They flower early, and mature seed early, usually before the gardener, pushed by spring work, gets a chance to cut at them. But the plant does not care what becomes of its stalk after the seeds have fallen. When the weather cools, the seeds grow, and plants are on hand by winter, ready for spring growth and flowering. Among these may be named the different species of Dead Nettle, Shepherd's Purse, Whitlow Grass, Rock Cress and some others less common. The coarse, annual ones that start in spring, and flower and seed during the summer and autumn, are not troublesome, unless perhaps the Purslane be excepted. This cannot be killed by the hoe or the cultivator, unless when the plants are very young. Its succulent stems refuse to die, and will mature seed as well without roots as with them. These summer annuals along the Atlantic slope are chiefly Wild Buckwheat or Knot Grass, Devil Weed or Viper's Bugloss, Tick Seeds or Devil's Needles, Wild Carrot, Wild Chamomile, Cockle-bur, Rag Weed, Jamestown or Jimson Weed, Lamb's Quarters, Spanish Needles, Rich Weed, the English Sow Thistle in many places, and some annual grasses. The greatest enemies are, however, the perennial rooting intruders.

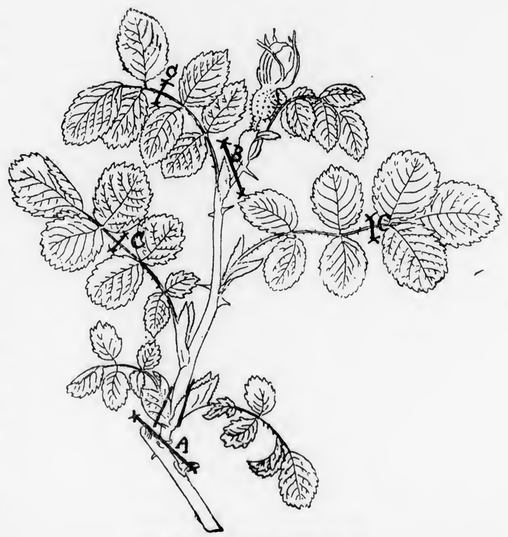
LICORICE.—Mr. Henry N. Rittenhouse, in the February issue of the *American Journal of Pharmacy*, calls attention to the licorice root in the United Sates. If it could be cultivated in this country, it would be enormously profitable. No less than eighty millions of pounds a year are introduced into this country on an average, while the consumption increases yearly. Attempts have frequently been made for several generations, to cultivate it successfully in this country, but all seem to have failed ; but in a country of such immense extent as ours there ought certainly to be many places in which it would succeed well. A small experiment last year, in the Meehans' Nurseries, resulted in having the leaves of the plants burned badly during the hot summer months, and the lesson from this would probably be that a higher altitude would produce better results. Mr. Isaac Lee, of Florin, near Sacramento, Cal., grew several acres of it successfully, in 1886, but abandoned it, it is said, for want of a whole market. This is generally the experience with all persons engaged in introducing new products. Buyers usually are reluctant to give up commercial connections already formed, for new ones that may be of doubtful permanence. There ought always be some understanding between a grower and some manufacturer or merchant, that the stock will be taken if it can be successfully produced. If it is a fact that it will grow healthful in the vicinity of Sacramento, a wide-awake horticulturist of that region ought to take hold of it, as they have of other matters of a similar character, and make it a success. It was for a long time thought that the preparation of raisins from the grape would never be a commercial success in California ; but every one knows better to-day.



FORCHHAMMERIA PALLIDA.—SEE PAGE 83.

INTENTIONAL SECOND EXPOSURE

TO MAKE ROSE CUTTINGS.—Rose cuttings are of two classes. In the autumn they may be made of mature wood, cutting the stems of the past season into sections four or five inches long, and planting them before the end of December, anywhere secure from frost,—but not where the temperature is above 45°, till the regular spring season arrives. The other plan is by cuttings of immature wood taken about the flowering season. These have to be planted in some situation unfavorable to withering,—and indeed to help against excessive evaporation, some of the leaflets should be shortened. The following illustration, from *Lyon Horticole*, shows how this is done, very nicely. The cutting is taken off near the mature wood at *A*, and the flower bud at *B*,—while the shortening of the leaflets is shown at *C*.



TO MAKE ROSE CUTTINGS.

PROPER ARRANGEMENT OF SHRUBS.—When selecting shrubs for planting, it must not be overlooked that the sorts to select will depend on the situation they are intended for. Native shrubs are to be used wherever a partly natural appearance is desirable, while foreign ones are more in keeping with the more artificial portions of the ground. Take the Japanese Hydrangea, for example. On a well mown lawn, it is a pleasing object, in full touch with the reclaimed grounds. as all lawns may be termed. But set this same shrub in a wood or along its border, and its out-of-place character is obvious. It is not saying, however, that native plants cannot be used on lawns. A group of them here and there often relieves what would otherwise be a too artificial character, especially when grounds are extensive, and the lawn proper runs into less carefully kept grounds. For the bordering of woods and streams, where nature and art meet, the best landscape gardeners now use native shrubs and vines largely in their plantings, sometimes massing individual sorts to produce decided effects at certain seasons,—such, for instance, as the sumach, for its brilliant autumn dress.

There are several species of sumach with autumn colored leaves. The Stag's Horn, *Rhus typhina*, is taller than the tanner's sumach—*R. Glabra*.

HARDINESS OF THE MONKEY-PUZZLE TREE.—M. H. P., says in reference to the paragraph from Mr. Douglas, Page 171, Vol. IV, regarding the hardiness of *Araucaria imbricata*:

"'A misleading statement,' so has Mr. Douglas characterized the reply, made some months ago, to the question of the editor, 'Can any one inform us, if the *Araucaria imbricata* is growing anywhere in the United States?' Well, there are some minds the truth even will mislead—so be it. The *Araucaria* has been growing unprotected in Mr. Vanderbilt's nurseries for some years. The exceptional cold, two winters ago, when the thermometer fell 14° below zero, injured them badly. Mr. Douglas states that the plant 'will not grow in the United States.' This seems strange, as there are large portions of the land where the thermometer has never been known to fall to zero; but since he is so anxious 'for farmers not to be misled,' doubtless he has made careful investigations."

It is possible that Mr. Douglas had *Araucaria excelsa* in mind. This is more likely, considering the reference to Southern California, where *A. excelsa*, the Norfolk Island Pine, is not uncommon. There seems no reason why *A. imbricata*, should not be fairly hardy at Asheville.

WINTER IN THE GARDEN.—To the true lover of gardening, winter has charms fully equal to those furnished by summer flowers. Not the least of these pleasurable subjects, is the beauty of leafless trees. As a rule, every species of tree has characteristics exclusively its own, and one in love with the subject can distinguish a species as well by the bark or system of branching, as by flowers or fruit. Almost any species of oak can be named by the close observer as well by its system of branching as by its acorns. Indeed, some can decide a species better this way than by any other. The Willow Oak, for instance, has numerous twiggy branches, in this respect rivaling the beech; but the upright character of the growth is the opposite of the beech. The Pin Oak can be always positively decided upon by the tendency of the lower branches to decline straight from the junction with the stem, and not curving down as others would. The Black Oak always has its branches diverging at a flattish angle, while its neighbor, the Scarlet Oak, takes a more acute line.

The Chestnut Oak has a tendency to branch low, as in the White Oak; but the branching is very irregular. One of the most beautiful, if a gradual regularity on a fixed plane be taken into consideration, is the Swamp White Oak. A master in the art of pruning could not produce a more beautifully regular tree than Nature hands over to us in a good specimen of this one.

It is extremely difficult for the Botanist, accustomed merely to look to leaves and acorns, to tell some forms of the Swamp White Oak from forms of the Mossy-cup Oak; but the winter habit of the trees never leads one astray.

Then, the general characteristics of trees furnish a grand study when in the bare and leafless state. The fond observer can easily tell a beech from a linden, an oak from an ash, and so on throughout the whole line. No two families of plants have trees of like aspects. This is particularly true of specimens that have had a chance to stand out by themselves, so as to show just what character Nature intended they should bear.

In planting, all this should be borne in mind. Some trees must be set out for the cool, summer shade they give, others to protect us from winter storms. Often when this has been secured there is not much room for other trees. But wherever practicable, room should be kept for a few,—at least one, to grow up without interference from other trees. It will be a great pleasure to watch it, when leafless every year, as it grows,—and when it reaches maturer years, it will furnish a beauty which the eye will never tire of feasting on. The writer has, in view of his library window, a specimen of the Colchican Maple, some forty years old, which, in summer, presents merely a shapely mass of green foliage not much differing from the Norway Maple. But to see it in winter is altogether another thing. One may sit by the hour, and never tire of scanning it,—and on every new observation, new beauties appear.

These leafless trees give an interest to winter that summer can scarcely supply, and every lover of a garden will do well to study this lovely branch of the delightful art.

TO GET A GOOD LAWN SOON.—A Harrisburg correspondent says:—

"A friend of mine has recently erected a house, and has about one acre of land around it, which he wishes to get well set with grass as quickly as is consistent with permanence; how shall he go about the work?

The ground is presumably in the condition usually surrounding a newly erected building."

The method of planting a lawn, as recommended by Mr. J. B. Olcott, should meet this case. Get the kind of grass desired, and break it up with small rooted pieces, plant with a trowel about six inches, or so, apart, and then roll the whole smoothly. Kentucky blue grass, set out in this way, would meet each centre before mid-summer, and make a nice, even lawn before then. Aside from this, one must either sod the whole of it, or sow grass seed.

THE LABURNUM, OR GOLDEN CHAIN.—Mrs. Seliger, Hartford, Conn., notes: "The Scotch Laburnum you speak of in the March number, as "golden chain" we call in Germany Gold Regen (Golden Rain in English). It is, indeed, a remarkably, handsome little tree, with its pendant, clear yellow blossoms, which ought to be more extensively found. So far it is yet quite rare here. I have had very nice seedlings of them, but somehow, lost them again, by leaving them out of doors the first winter. Yet the seed germinates freely."

STEAM HEATING.—In the old world, plant houses, judging by advertisements in the horticultural papers, are still mostly heated by hot water. This is being largely abandoned, by all the large florists in America, in favor of steam. In order to be profitable, the houses have, of course, to be erected on a rather large scale, as it is found good economy to have a separate staff of hands for night and day work. The work of caring for the plants is done by the night force, just as the day work always has been done by the attendants. Many florists not only have their plant houses heated, but also their dwelling houses on the establishment, by steam from the same boiler. In some cities, companies are chartered to furnish the steam heat to whole blocks of houses, sometimes covering the area of many acres, by one boiler, and in such cases the florist has no occasion to have a separate steam heating apparatus of his own, but depends on the heat furnished by the company. The *American Florist* notes that in the city of Denver many of the largest blocks are heated by steam heat generated by boilers a mile away. Progressive florists will have to look into these things,—it may be to their interest to use heating apparatus that will not only supply their own plant houses, but to many of their neighbors as well, and in this way make an additional profit to that derived from the growth of flowers.

NEW OR RARE PLANTS.

FORAGE PLANTS.—Mr. Stephen S. Price writes to inquire the value of *Polygonum sachalinense* as a forage plant. It has achieved some reputation as thriving well in very dry localities where nothing else will succeed. What its value may be in these parts of our country, where we can secure Indian corn for food, may be a question. It is scarcely, if at all, different from *Polygonum cuspidatum*, which has been growing in American gardens for some eight or ten years past. Like the Canadian Thistle, it is one of those rooting plants which have come to stay, when once planted. At various times during the past quarter of a century, various forage plants of this character have been introduced, and after many dollars have been invested in them, they seem to grow out of popularity as rapidly as they entered it. The Prickley Comfrey was one of the latest of these introductions. It is to be hoped that this new candidate for popular favor will be more successful in maintaining its hold on the cattle feeder.

NEW DOUBLE PYRETHRUM.—Most intelligent flower-lovers know little more of the *Pyrethrum* than that it is the foundation of insect powder sold in drug stores. The single variety has little more beauty than our common wild Ox-eye Daisy; but of late years, varieties have been produced which are as double as chrysanthemums, and of various shades of color. Messrs. Vick & Sons, of Rochester, N. Y., have brought this to our attention by a pretty lithograph showing the various forms and colors. The plants are perfectly hardy and grow well in ordinary garden soil, and take care of themselves with less watchfulness from loving hands, than many other border flowers.

VIBURNUM PLICATUM ROTUNDIFOLIUM.—A plant quite uncommon, even in nurseries containing a varied collection of ornamental shrubs, is the *Viburnum plicatum rotundifolium*, a variety of the now well-known Japan Snowball, but with rounder leaves than the older sort; otherwise, in general appearance it is the same. But in the fall there is quite a difference,—the old form retains its deep olive-green leaves until severe frost finally destroys them; but the newer sort has the characteristic of assuming rich autumnal coloring, deep bronze, copper and rich brown. It is on this account that it should be largely planted with other shrubs, as the acquisition of such colors in the shrubbery beds is to be desired.

NEW HYBRID TEA ROSE.—A remarkably strong-growing and free-flowering hybrid tea rose is Belle Siebrecht. It is a bright crimson, with an egg-shaped bud. The buds are borne in large clusters. It is said to be a cross between La France and Lady Mary Fitzwilliam. It has been illustrated in a recent issue of the *Florists' Exchange*.

HELENIUM AUTUMNALE SUPERBUM.—Mr. F. L. Temple, of Boston, is doing good work in bringing this plant to notice. He says of a plant that he had in his grounds last year, that it was "four feet in the diameter of the mass of flowers, while another plant near it, in a large rockery, and of the same age, but with the stems tied out fan-shape, was six feet high and nine feet across the top of the "fan" of blossoms,—a wonderful display of beautiful flowers as ever twenty-five years' experience in horticulture have shown us. A fringe of these Heleniums planted in front of a long mass of *Pinus strobus*, on our own grounds, produced, the first season, from September 1st to November 1st, such a gorgeous display of richly contrasted green and yellow that the fame of it drew hundreds of people to see this sight."

A plant came under the conductors' observation last season, and the variety well merits what Mr. Temple says of it.

THE HARDY FLOWER GARDEN.

CULTIVATION OF ASTERS.—An aster garden cannot be excelled for floral interest. Some are making collections of the various species. Mr. John N. Gerard, of Elizabeth, N. J., has in his garden, about thirty species and marked varieties.

THE VICTORIA REGIA.—The writer of this well remembers the interest taken in his success in flowering, for the first time in this country, the wonderful and beautiful water lily—*Victoria regia*. This was in 1852. It was then thought essential to have an expensively constructed house in which to successfully grow it. The house in which this plant originally flowered, cost several thousand dollars to construct. Intelligent floriculture has now progressed so far that almost any one at a very small expense can enjoy this remarkable tropical plant. It is now said to be an annual, although the original plant flourished for several years in the expensive house built for it. At any rate, the plant, under the proper method of cultivation, can be raised from seed and brought to flower in the open air of our country, in one season, just as well as if it were an annual. It is this fact which gives it so much value and interest for open air culture.

THE COMPENSATIONS IN NATURE.—It has been noted that where the summer season is comparatively short, and the winter season long, Nature starts the earlier flowering plants in the most surprising way, and on the other hand runs the fall flowers far into the winter season. In Siberia, a large number of plants will resist early frost, and continue to bloom for a considerable time after the temperature has fallen below freezing point. One of the most beautiful and gorgeous of these, is the *Aster tataricus*,—a plant growing some three feet in height, and bearing an immense profusion of bright purple flowers. In the writer's garden it made a great show, even up to the first of November. The same may be said of the Maximillian Sunflower—a native of the northwestern part of our territory, which was also gayly in bloom with the *Aster tataricus*. A selection of these late flowering plants, grouped in a distinguished manner in some large public garden, would attract a multitude of interested visitors.

THE MYRTLE OR PERIWINKLE.—In connection with the subject of plants that will do well in deep shade, it may be mentioned that few things are better for this purpose than the dwarf periwinkle, *Vinca minor*. No matter how deep the shade, or how dry the earth may be under trees, this form of periwinkle does admirably. It is found under the deep shade of pine forests in the Old World. It is frequently used in America as a covering for graves. It then goes by the name of myrtle, although very different from the true myrtle of the poets. There are four marked varieties in cultivation; one is the ordinary blue, another pink, a pure white variety, and a double form of the pink. The flowers come up in early spring, immediately after which the old leaves die away and a new set of leaves take their place. In many respects, there is not a more useful plant in the list used by lovers of gardening.

THE DAHLIA.—There are few garden flowers that make a brighter show in autumn than the improved varieties of the Mexican dahlia. Like many other beautiful garden flowers, however, they rise and fall in popularity. No one can tell the reasons for these changes in fashions regarding flowers. Of late years it has been on the declining wave; but there are indications of a move in the contrary direction. Recently there was a meeting of flower lovers in the city of Philadelphia, when it was decided to form a Dahlia Society. Those intent on im-

proving should look in the direction of producing earlier blooming kinds. Still, the dahlia does not like heat, and its great glory will always be at the end of September.

THE ENGLISH SWEET VIOLET. — Mrs. Wilhelmine Seliger, of Hartford, Conn., says :—

"Referring to the March number, I mean to see the conductor of your valuable magazine smile when I venture to take part with Miss Babcock, and assert, too, that the little *white* violets are one mass of bloom very early, in company with other spring flowers. I have them in my garden, and shall beg the privilege of sending you some, plants and all, as soon as they will open, though our country hereabout is yet under snow and ice. Their clear white, open blossoms and foliage are exactly as the little purple wild ones I have, though their fragrance is perhaps not quite so strong. Yet I have, years ago, when I had no garden of my own, walked purposely by a certain street corner, around the old Governor Toucy's residence, on Prospect and Grove Street, now remodelled and occupied by the Travelers' Insurance Co. (I enclose a view of it), to get a sniff of that delicious violet perfume pervading there, from the little white blossoms, which grew in the corner under a certain lot of shrubbery. In my own garden, I have now both colors of these very hardy violets planted together, hoping to get some time, by cross-fertilization, a blotched or striped variety of them.

There is also a *scentless* white violet growing here, in certain localities, wild, which has stiff, narrow, upright-standing leaves, but the blossom is very small."

On reflection, Mrs. S. seems probably justified "in taking part with Miss Babcock" against MEEHANS' MONTHLY ; but at the time of writing the paragraph, it did not seem probable that the English Sweet Violet had established itself so widely in our country. But the writer now remembers a visit to a garden, forty years ago, wherein was a small grove, mostly of full grown American Ash,—and the whole surface beneath these trees was covered by this white form of English Sweet Violet, and a little later, lilies of the valley. These plants delight in partial shade, and do not seem to mind the drying up in summer time, by the roots of the trees.

FRUITS AND VEGETABLES.

TO GET EARLY POTATOES.—Seeing the notice about early potatoes, in the February number, brought to mind some experience when I was a farmer. Late in the season for selling I had about three hundred bushels of potatoes in the cellar, and, of course, was worried about a market. While standing by the pile I noticed they were sprouting, and further (as most others have) that the longest sprouts came from one end of the potato. Thinking the matter over, I remembered that in the field the sprouts came up very unevenly, the early ones about a yard or more apart, while I much feared the others had rotted. But in about two weeks the others appeared. I thought,—can these early sprouts come *altogether* from the one end of the potato? Looking further I remembered that when digging for early potatoes I would find one ripe hill of full size, while in the next four or five hills they would be very small. I reasoned, — can these early potatoes come *entirely* from the early sprouts? When it came time to plant I carried my reasoning to trial. Without giving any reason, I cut all the seed myself, first taking off about an inch of the sprout end and splitting that. These were put separate, and were planted separate. The result? Those rows planted with the *sprouted* end came up all at the same time, two weeks before the others, and when dug were all ripe alike, and also two weeks in advance.

Always thereafter I planted in that way, and always had ripe potatoes on my table two weeks before my neighbors. EDWARD TATNALL.
Wilmington, Del.

SETTING OUT CABBAGE AND TOMATO PLANTS.—Many persons set out plants of this character in a comparatively dry time, and in order to prevent their wilting pour water around the plants after they are planted. A much better plan is to make the holes first with a dibble, and then fill water into the holes, allowing the water to fully soak away, and then put the plant into the hole, pressing the earth firmly against it. Plants will then need no surface watering, and do much better than if they had it. Some people in order to prevent wilting cover the plants with an inverted flower pot for some twenty-four hours, which is also an excellent practice.

DISEASE IN DWARF BEANS.—The authorities of the Maine State College Experiment Station say that the disease known by some agriculturists as the "black spot" which attacks the young beans, and prevents their full development, is getting very common in the gardens and fields about Orono. Like so many similar troubles it results from minute funguses, which go by the rather difficult name of *Colletotrichium Lindemuthianum*.

THE SAN JOSE BARK-SCALE.—Mr. Thomas J. Edge, Secretary of the State Board of Agriculture of Pennsylvania, says that the San Jose Bark-Scale has appeared in some parts of Pennsylvania, and adds :

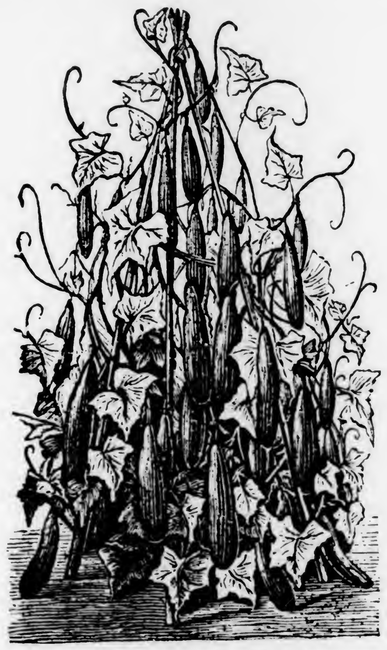
"Prof. Howard states that the San Jose Scale belongs to the same group of scale insects as the common and well-known oyster-shell bark louse of the apple family. It differs from this insect, and in fact from all other eastern species from deciduous fruit trees, in that the scale is perfectly round or at most very slightly elongated or irregular. It is flat, pressed close to the bark, resembles the bark of the twig in color, and when fully grown is about one-eighth of an inch in diameter. At or near the middle of each scale is a small, round, slightly elongated, black point, or this point may sometimes appear yellowish.

Prof. Howard recommended that where trees have been very badly infested, the safest and, in the long run, the most economical course to pursue is to cut and burn trunks and branches. Where infestation is less marked, insecticide washes and sprays may be used. He favors the kerosene emulsion for destroying the young lice, and a preparation of resin and caustic soda for the older scale. The formula for the latter preparation is as follows :

Resin, 20 pounds ; caustic soda (70 per cent. strength), 5 pounds ; fish oil, 3 pints ; with sufficient water added to make 100 gallons. This to be applied to the trees by means of a sprayer."

As painting the branches of the trees with pure linseed oil, in the winter time, has been found easily effective against ordinary scale insects, why should it not be in this also? The only care required is not to use adulterated oil. Any cheap vegetable oil would do as well. Pure vegetable oil is harmless. Mineral oils destroy the bark.

STAKING CUCUMBERS.—In MEEHANS' MONTHLY note has often been made of the fact that the cucumber will produce enormous crops when grown on bushy stakes to an extent surprising to those who have only seen the plants left to crawl along the dirty ground. Aside from this is the point, always welcome to the amateur gardener, that the plants seem so cleanly and so happy when grown in this way, that they can almost harbor a contempt for their unfortunate friends left to grovel in the ordinary "truck patch." The cucumber can climb



STAKES FOR CUCUMBERS

only by tendrils, which they have to fasten around comparatively small sticks which, singly, are not sufficient to support the weight of the crop. Mr. Bunting, the well-known seedsman of Colchester, England, gets over the difficulty by setting a half dozen light stakes into the ground and then drawing them together at the top and tying them there. The annexed illustration explains the mode. This can be done not only for cucumbers, but for any "viny" plant, either in the vegetable or flower garden.

THE APPLE TREE BORER.—An article in an exchange of high character contends that the apple tree is degenerating in the climate of America, and adduces in support of this position that they are not as long lived as they used to be; but in most cases it will be found the early death of the apple tree results more from the attack of the apple borer than from any degenerating influences. This great enemy of the apple tree enters the trunk near the surface of the ground, and in many cases is at work a number of years before its discovery. Its presence is easily ascertained by an examination, when sawdust-like particles will be found around the base of the tree. This insect lives several years in the tree, feeding on its juice before it becomes a perfect beetle. If this insect is kept from depredating, the apple would live as long now as it did before the insect became so abundant.

When young apple trees are planted is the time to commence protection work. Common wheel grease, which in many cases is a composition of lard and pine tar, is the best preventative to use. It costs very little time and labor to paint the base of the tree with this material. It need not extend more than six inches from the surface of the ground. It is a complete protection against the apple borer, as well as rabbits, mice, and other creatures which often prove destructive in the young apple orchard. In trees that have been neglected, and it may be desirable to commence the practice, one ought to be certain that the worms are destroyed before applying the grease. This is done by cleaning the outer portion of the hole with a penknife, and then running in a wire far enough to crush the insect.

PRUNING FRUIT TREES.—In pruning fruit trees, attention has to be given to the manner in which the particular kind bears its fruit. The cherry and the pear both bear their fruit on short spurs, and in trimming, therefore, the effort should be to produce a large quantity of healthy fruit spurs. Summer pruning does this admirably. The branches that we want to remain as leading shoots should not be touched; but the weaker ones may be pinched back, about mid-summer, one foot or two-thirds of their growth. This will induce the swelling of a number of buds that will produce flowers instead of branches, and in this way, fruit-spurs can be obtained on comparatively young trees; but with such kinds as the grape vine, the fruit is born on the branches of last year's growth, so the effort should be to throw all the vigor possible into those growing branches that we want to bear fruit the next season. To do this, we pinch back the shoots that we do not want to extend; or even pull these weak shoots out altogether. A little pruning is then necessary, in the winter, to shorten back these strong, bearing canes, or to prune out altogether the weaker ones that we check by pinching back during the growing season.

PEACHES IN PENNSYLVANIA.—Pennsylvania has not had the reputation of being a great peach-growing territory; but occasionally we hear of considerable success in this line. Last year, Solomon Shearer, of Vinemont, Berks Co., had an orchard of twenty acres, which yielded 10,000 baskets of fruit. Daniel M. Seyler, in the same county, had a small orchard which bore 2,000 baskets. David Keyser, of Tuckerton, and Edward Knowinger, in the same county, had also small orchards which yielded 4,000 and 2,000 baskets respectively. In Lehigh County, most of the farmers who had peach orchards had good success, and it is said received over $60,000 for their crop. The feeling that there is something worth looking at in peach culture, is growing in these Pennsylvania counties. It is said that in Lehigh County alone it is estimated that there have been over 20,000 trees set out during the past two years.

WHAT IS THE MEASUREMENT OF THE LARGEST PEACH?—Much interest is felt in this question since MEEHANS' MONTHLY started the inquiry. Mr. J. H. Hale, referring to the statement recently made that Mr. W. A. G. Adams, of Dallas, Texas, had Chinese clings ten and a quarter inches, says he has had a Crosby to measure eleven and a half, so that Connecticut goes ahead of Texas so far. But the end is not yet.

HENDERSON'S EARLY SNOWBALL CAULIFLOWER.—Petersen Bros., of Copenhagen, Denmark, write that the variety of cauliflower known under this name in America is being sold as the Danish Early Snowball in that country.

THE WEEPING WILLOW A NATIVE OF BABYLON.—SEE PAGE 99.

THE APPLE TREE BORER.—An article in an exchange of high character contends that the apple tree is degenerating in the climate of America, and adduces in support of this position that they are not as long lived as they used to be; but in most cases it will be found the early death of the apple tree results more from the attack of the apple borer than from any degenerating influences. This great enemy of the apple tree enters the trunk near the surface of the ground, and in many cases is at work a number of years before its discovery. Its presence is easily ascertained by an examination, when sawdust-like particles will be found around the base of the tree. This insect lives several years in the tree, feeding on its juice before it becomes a perfect beetle. If this insect is kept from depredating, the apple would live as long now as it did before the insect became so abundant.

When young apple trees are planted is the time to commence protection work. Common wheel grease, which in many cases is a composition of lard and pine tar, is the best preventative to use. It costs very little time and labor to paint the base of the tree with this material. It need not extend more than six inches from the surface of the ground. It is a complete protection against the apple borer, as well as rabbits, mice, and other creatures which often prove destructive in the young apple orchard. In trees that have been neglected, and it may be desirable to commence the practice, one ought to be certain that the worms are destroyed before applying the grease. This is done by cleaning the outer portion of the hole with a penknife, and then running in a wire far enough to crush the insect.

PRUNING FRUIT TREES.—In pruning fruit trees, attention has to be given to the manner in which the particular kind bears its fruit. The cherry and the pear both bear their fruit on short spurs, and in trimming, therefore, the effort should be to produce a large quantity of healthy fruit spurs. Summer pruning does this admirably. The branches that we want to remain as leading shoots should not be touched; but the weaker ones may be pinched back, about mid-summer, one foot or two-thirds of their growth. This will induce the swelling of a number of buds that will produce flowers instead of branches, and in this way, fruit-spurs can be obtained on comparatively young trees; but with such kinds as the grape vine, the fruit is born on the branches of last year's growth, so the effort should be to throw all the vigor possible into those growing branches that we want to bear fruit the next season. To do this, we pinch back the shoots that we do not want to extend; or even pull these weak shoots out altogether. A little pruning is then necessary, in the winter, to shorten back these strong, bearing canes, or to prune out altogether the weaker ones that we check by pinching back during the growing season.

PEACHES IN PENNSYLVANIA.—Pennsylvania has not had the reputation of being a great peach-growing territory; but occasionally we hear of considerable success in this line. Last year, Solomon Shearer, of Vinemont, Berks Co., had an orchard of twenty acres, which yielded 10,000 baskets of fruit. Daniel M. Seyler, in the same county, had a small orchard which bore 2,000 baskets. David Keyser, of Tuckerton, and Edward Knowinger, in the same county, had also small orchards which yielded 4,000 and 2,000 baskets respectively. In Lehigh County, most of the farmers who had peach orchards had good success, and it is said received over $60,000 for their crop. The feeling that there is something worth looking at in peach culture, is growing in these Pennsylvania counties. It is said that in Lehigh County alone it is estimated that there have been over 20,000 trees set out during the past two years.

WHAT IS THE MEASUREMENT OF THE LARGEST PEACH?—Much interest is felt in this question since MEEHANS' MONTHLY started the inquiry. Mr. J. H. Hale, referring to the statement recently made that Mr. W. A. G. Adams, of Dallas, Texas, had Chinese clings ten and a quarter inches, says he has had a Crosby to measure eleven and a half, so that Connecticut goes ahead of Texas so far. But the end is not yet.

HENDERSON'S EARLY SNOWBALL CAULIFLOWER.—Petersen Bros., of Copenhagen, Denmark, write that the variety of cauliflower known under this name in America is being sold as the Danish Early Snowball in that country.

THE WEEPING WILLOW A NATIVE OF BABYLON.—SEE PAGE 99.

INTENTIONAL SECOND EXPOSURE

BIOGRAPHY AND LITERATURE.

SERMON OF JACK-IN-THE-PULPIT.

"And the burden of this of the sermon I preach,
That each should give of his gift to each,—
The dewberry offer her sweetest fruit,
The thrush a tune on his forest-flute,
The chestnut the nuts from her burs that burst,
The brook a draught for the summer thirst,
The wilding her beauty and fragrance give
To all in these shadowy haunts that live.

From my pulpit, in bronze and green arrayed,
'Tis thus I preach in the forest-shade,
And he who comes to the temple grand,
Older than any that man hath planned,
By a magic spirit forever renewed,
For the tribes whose haunt is the solemn wood,
And lists with obedient mind and heart,
To the faithful lessons I here impart,
Returns to feverish cities of men,
With soul refreshed for his work again."

—HOWARD WORCESTER GILBERT.

DR. JOHN A. RYDER.—The list of Philadelphia botanists claimed by death, has still another victim added to it—Dr. John Adam Ryder having passed away on the 28th of April.

In early life, he assisted his father in the management of a nursery and fruit farm at Chambersburg; but when but a youth, his father met with misfortune, and the son started to make his own way in the world. From a child, he was a lover of nature, and reaching Philadelphia, he learned that some benevolent people, Messrs. Jessup and Moore, had left funds in the hands of the Academy of Natural Sciences, the interest of which was to aid poor young men to scientific eminence. They receive $5 per week, work half a day in the Academy's museum, and have the other half day for study. Being out of funds, he walked all the way from Philadelphia to Germantown, to inquire of a correspondent of his father for further particulars. He succeeded in getting an appointment on this fund. For at least a year he managed to live, in Philadelphia, absolutely on this small sum, while pursuing his scientific studies. In the plant-life department of botany he soon became a recognized authority. Extending his studies to animal life, he soon became eminent all over the world. He gained the honorary title of Doctor of Philosophy, and at the time of his death, was Professor of Embryology in the University of Pennsylvania. He leaves a widow, to whom he was but recently united, and hosts of friends all over the world, to deplore his loss.

DR. W. S. W. RUSCHENBERGER. — For the fourth time during the past few months, the Botanical Department of the Academy of Natural Sciences of Philadelphia loses an illustrious associate,—this time Dr. W. S. W. Ruschenberger, who died on the 24th of March, in his 88th year. He was born in Cumberland County, N. J. From 1835 to 1837 he was fleet surgeon to the East India Squadron of the United States service, and he brought home collections which enriched the academy,—the plants of Chili being very numerous in the herbarium. His great pride in life was to serve science, without caring in the slightest degree for honor or reputation in connection therewith. Still the Academy insisted in honoring him as its president during many years,—and up to last January he was Director of the Botanical Section, from which he was retired, only at his urgent request. The present magnificent building of the academy was built by subscription; in the hard work of collecting which, he bore probably the largest part.

PARK AND CEMETERY.—Volume V of a monthly magazine known as *The Modern Cemetery*, commences with a change of name to *Park and Cemetery*. Modern cemeteries are really gardens, instead of "church yards," as formerly, and this excellent serial has always seemed to be an effective laborer in the great field of landscape gardening. It is published at 334 Dearborn street, Chicago.

PROFESSOR C. V. RILEY.—Professor Riley, formerly Entomologist to the Department of Agriculture, at Washington, D. C., is now engaged in the United States National Museum.

IS THE WEEPING-WILLOW A NATIVE OF BABYLON?—Mr. Tillinghast says:

"The interesting note on 'The History of the Weeping-willow' (in its relation to the subject of the Bible flora) in the February number of the MONTHLY, brings to mind two verses in the Old Testament in which the Hebrew word '*Arâbim* 'is translated 'willows,' viz: Leviticus XXIII. 40. 'And ye shall take you on the first day the boughs of goodly trees, branches of palm trees, and the boughs of thick trees, and *willows* of the brook,' and Job XL. 22. 'The shady trees cover him with their shadow; the *willows* of the brook compass him about:' We are told, in the latest edition of the Oxford Teacher's Bible, that these '*Arâbim* are always said to grow in the valley, and were used for constructing booths for the Feast of Tabernacles,' and furthermore, that this word '*Arâbim* and one other Hebrew word, *Tzaphtzâphah*, 'both, without doubt, denote the 'willow,' of which many varieties are found in Palestine;' and that 'Tristram suggests the oleander, which flourishes abundantly by the water-courses and lines every valley, but there seems no justification for this suggestion.'

If the Hebrew words mentioned denote neither the willow nor the oleander, what plant *do* they probably refer to?"

The senior conductor of MEEHANS' MONTHLY has repeatedly shown during the past half a century that the "Pope's Weeping Willow" story is a striking commentary on the "truths of history," a large portion of which is simply afterthought worked up by ingenious guessing. No "fig basket" or any basket could be made from the Weeping Willow, the stems of which are as brittle as glass,—neither the Weeping Willow, nor any willow is a native of Babylon or that part of the world. The Weeping Willow is a native of China, and never saw the Old World until the Dutch obtained a footing there.

But seeing the interest taken in what MEEHANS' MONTHLY has said of this matter, and the interest felt in Bible history every where, we have been over the whole subject, and now show exactly what is the willow of Babylon on which the unfortunate Hebrew captives sadly hung their harps. That the translators have made them "willows" makes no difference to us. New versions are continually appearing, changing the language of Scripture in accordance with the light of new discoveries. There can be no reason why MEEHANS' MONTHLY should not have the privilege of adding one correction more when the facts warrant it.

No willow grows on the Euphrates. The only one found in all Syria is our common White Willow, *Salix alba*, and this is occasionally seen as an introduced plant of modern times.

The "willow" of Babylon is a poplar, *Populus Euphratica*. It is a singularly beautiful and interesting tree. Knowing of no good picture of it, we have had one made from specimens gathered at Babylon, and which were taken from a female tree, see page 97. The spring branches are somewhat pendulous at the extremities, as shown in figure 1. The leaves of this preliminary branch resemble much, in outline, our Goat Willow, *Salix Caprea*, of which the common Kilmarnock Willow is the female form. The secondary growth of the season, fig. 2, has long, narrow, and slender branches that grow in lengths and curve from the outside of the tree, much as a Weeping Willow does, and may fairly lead one to believe that he has a Weeping Willow before him. But the flowering branches have a wholly different foliage, much as our *Populus grandidentata* has, broad and deeply toothed. Indeed, in this habit of varying its foliage with peculiar conditions of growth, it has a power in common with many other poplars. No one not familiar with the fact, could believe a branch of a young *Populus grandidentata*, and one from a mature tree could belong to the same species. A flowering branch with the native seed-bearing catkin is represented by fig. 3.

If this effort of MEEHANS' MONTHLY, to properly expound the Scriptures, and show up the "Pope Willow" story, and the Babylonian origin of our common Weeping Willow is not effective there is no "balm in Gilead"!

W. S. KIMBALL.—Orchid growers, all over the world, are familiar with the name of W. S. Kimball, whose collection is regarded as one of the finest in America, if not in the world. A number of fine varieties have been named in his honor. After undergoing a surgical operation, he died at his home, in Rochester, the last week in April. He was but 58 years of age, and the Vice-President of a wealthy company.

GENERAL NOTES.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—The next meeting of the A. A. A. S. will be held at Springfield, Mass., commencing August 28th. Botanists always welcome these meetings. F. W. Putnam, Salem, Mass., is the permanent secretary.

THE GODDESS OF DEWS. — That Chicago correspondent who would have Diana the goddess of "dues," when her statue was placed over a tax office, writes "I am wondering who your irreverent correspondent is that is suffering from that terrible disease you mention. I am in full health." Chicago must be fortunate. In all large Eastern cities, the fearful microbe, *Bacillus tributivorus*,—the devourer of the taxes—is creating intense alarm by its fearful ravages.

DOG'S GRASS.—No one has any objection to the use of common names in general literature or correspondence, after they have become common,—but they bother the conductors of magazines who are expected to know everything. A circular before the writer says that "the prices of Dog's Grass being liable to fluctuation, will be given on application." What, in the name of Linnæus, is Dog's Grass?

AUTUMN FLOWERS IN NEW ENGLAND.—Dr. L. W. Dean, of Waterville, N. Y., comments on the remarkable beauty of the wild flowers in that section, the past autumn. Goldenrods were still in bloom by the road-sides, on the first of October,—daisies, chicories, wild asters and many similar plants, were abundantly in bloom. The chicory, which is a native of the Old World, is quite common, and the white flowered variety is not unusual. It is said to have been first introduced into America by the early German settlers of Pennsylvania, who used the dry root ground up, as coffee; and in the Old World, to this day, it is allowed by law to be mixed with coffee, which is not considered adulterated by it.

NEW FRUITS.—Varieties of fruits are liable to become generally subject to influences that impair their vital powers, and render them less valuable than on their first appearance. Hence, new varieties to replace them are in constant demand. Some of these may be valuable introductions,—some not. Magazines have to notice them as matters of news without feeling that such news notes shall be regarded as an endorsement. This paragraph is necessary from the fact that a simple notice of such an introduction in this magazine is given in a circular as "an endorsement by MEEHANS' MONTHLY."

THE AQUATIC GARDENS of W. W. LEE.—During the past few years, several florists have given attention to the cultivation of water plants, and through the efforts of these persevering tradesmen, lily-culture is becoming a favorite department of ornamental gardening. The recent report of the Massachusetts Horticultural Society quotes the aquatic gardens of Mr. W. W. Lee, of Northampton, Mass., as being an exceptionally attractive place. His lily ponds are made interesting, by having sloping banks of ferns arranged around them.

LEGISLATION AGAINST WEEDS.—Mr. Stewart, of Memphis, Tennessee, presents this excellent point :—

"Appropriating the Nation's Money on an excuse of Canada Thistle,—a grand scheme, certainly. If any excuse at all, it is a grand thing for those concerned, to advocate the spending of money. Step in, Mr. South,—your plantations are being abandoned, by being taken possession of by the Coco Grass."

BAMBOO CULTURE.—A Charleston, North Carolina, correspondent believes that the bamboo could be successfully and profitably grown on the abandoned rice fields of that region. By growing our own umbrella handles, we should have no question as to whether bamboo was wood or grass.

AMORPHA CANESCENS

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LEAD-PLANT OR LEAD-WORT.

NATURAL ORDER, LEGUMINOSÆ.

AMORPHA CANESCENS, Nuttall.—Suffruticose and canescently villous; leaflets small, numerous, crowded, ovate-elliptical, sub-sessile, mucronate; spikes aggregate; flowers sub-sessile; calyx teeth equal, oval, acute; vexillum bright blue; legume one-seeded. Leaves two to three inches long, leaflets coriaceous, sixteen to twenty-four pairs, obtuse at base, four to six by one to two lines wide; spikes two to three inches long. (Wood's *Class-Book of Botany*. See also Gray's *Manual of the Botany of the Northern United States*, and Chapman's *Flora of the Southern United States*.)

The author whose description of the botanical features of the plant is adopted above, remarks that it "is a beautiful species, two to four feet high, in dry sandy soils, Wisconsin to Louisiana and the Rocky Mountains, and is supposed to prefer localities of lead ore." It is indeed a plant of great beauty, and although our plate is a faithful representation of a specimen from Missouri, it gives but a faint idea of the beauty of great masses of the plant, as often seen by travelers in crossing the more arid regions towards the Rocky Mountains. The earlier explorers continually refer to it in their journals, as from day to day they traversed what were then the great western plains. It was first named *Amorpha canescens*, by Nuttall, in Fraser's catalogue, which was a list of plants collected in North America by John Fraser, and published in 1813. Pursh, who published a Flora of North America in 1814, describes it, and says he saw living plants, and that it grew on the banks of the Missouri and Mississippi. Nuttall, commenting on this in his *Genera of North American Plants*, in 1818, again describes it, referring particularly, to his original description in Fraser's catalogue, and comments sharply on Pursh's statement as "having seen a living plant," and asserts, "Mr. Pursh had never seen a flowering specimen except in my herbarium." Thus we see that the great beauty of the plant led to a little rivalry among these early botanists in the credit of first introducing it to the botanical world. Most of the explorers subsequent to these dates, note it in their travels as already stated. It is interesting to follow them as showing how the dates of flowering changed as the explorers progressed. Marcy, in his exploration of the Red River, under date of May 30th, remarks, "on the Witchita Mountains, we found *Amorpha canescens* in bloom." Stansbury, starting from Leavenworth for Fort Kearney, says, under date of June 12th, "*Œnothera*, in the landscape, was frequent with its bright yellow flowers, both to-day and yesterday, with *Amorpha* and *Artemisia*." On June 13th, reaching Sandy Creek, an affluent of the Little Blue River, "We noted *Amorpha* and *Artemisia*, still abundant." On June 14th, they reached a spot "where the Prairie Rose, Blue Lupine and a White Mallow, made goodly company for the *Amorpha*." On June 26th, they reached the Forks of the Platte, and seemed to be surprised to find "the *Amorpha* only just coming into bloom." Then we have Fremont, who, describing the wonderful scene embraced in his first view of the Kansas River, gives our plant an important place in the picture. "*Amorpha canescens* was a characteristic of the many beautiful plants in flower, and enlivened the green of the Prairie." At the crossing of the Big Vermillion, "the *Amorpha* still retained its characteristic place." Further on, we read "along our route, the *Amorpha* has been very abundant; but in variable bloom,—in some places bending beneath the weight of purple clusters, in others without a flower. It seems to love best the sunny slope. Nearing the Little Blue, he notes, "the country has been very sandy, and the plants less varied and abundant, with the exception of the *Amorpha*, which rivals the grass in quantity, though not so forward as it has been further eastward." When he reached the Platte River, he notices that the plant had cactuses for companion plants, and were "remarkable for the very large clusters of purple flowers."

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INTENTIONAL SECOND EXPOSURE

Reaching Lodge Pole Creek, he still notes the "*Amorpha* frequent among the ravines," but when he reached near where the town of Greely now stands, he seems to have had the last look at the lovely flower that had evidently given him so much cheer in the preliminary march to his subsequent difficult journey. The country through which these brave men marched will soon enter into literature as lost to nature. Civilization has not here made the desert "to blossom as a rose" lovelier than when *Amorpha* welcomed these adventurous men. Corn grows, and domestic cattle now graze, where the wild flowers bloomed, and it is well to preserve, even as language pictures, these little snatches of early beauty as the early traveler enjoyed it.

The genus to which our plant belongs is a remarkable one. It was at first classed with *Anthyllis*, which is a European plant,—and one species was named, *Anthyllis Barba-Jovis* or Jove's beard. The first American species, since known as *Amorpha fruticosa*, was, therefore, known as the "American Barba-Jovis," under which name it appears in some of the earlier botanical publications. Linnæus, in the *Hortus Cliffortianus*, first made our species into a new genus, *Amorpha*, or without form, because, says he, "it differs from all known plants of the universe, in having but a vexillum, and neither wings nor keel, which is singular among all *Papilionaceæ*." Our enlarged Fig. 1 shows this character very plainly. It will been seen that the calyx is remarkable by having the lower segment long drawn out, and the vexillum or upper petal of the corolla is then drawn out, as if to imitate the same style of growth. Linnæus was not wholly correct in believing that there was nothing like it in the universe. Another leguminose plant, *Amphicarpæa monoica*, has three forms of flower often on the same plant. These are hypogæus ones, from branches trailing along the ground, that never have more than the rudiments of an unopened corolla; perfectly papilionaceous ones that come from the upper portion of the twining branches; and then some that appear pistillate, getting pollen from the corrolla-bearing flowers, usually with no corrolla, but often having a small vexillum very similar to that in this species. It is a singular coincidence, that in both these cases, the vexillum is the least influenced by those forces that lead to the abortion of the petals. Another instance of this is furnished in some violets. The petaliferous form, in spring, is often succeeded by apetalous, fertile flowers. In the transition forms, the upper petals, in a much arrested condition, are often alone present. The "American Barba-Jovis" was first known to botanists in Europe, from seeds sent to England by Mark Catesby, in 1724. It was also known as "Bastard Indigo," because the early settlers in Carolina used the young shoots as an indigo plant. The genus, indeed, is not far removed from the true indigo. *Amorpha fruticosa* was said by Thunberg to be also a native of Japan. So many plants of the Atlantic States are also native to Japan, that it would not be surprising to find our plant there; but it does not appear among the latest enumeration of the plants of that country.

The plant varies much in character. The Missouri specimens we have taken for illustration are much less hoary than some often seen further west.

It has a wide, longitudinal range on the east of the Rocky Mountains. In the British Dominions, Macoun says he has found it as far north as Lat. 50°, quite abundant on the plains of the Red River; and has found some plants, in 1872, at Portage le Prairie, in Manitoba. Nicollet observed it in the prairie region between the sources of the Missouri and Mississippi. The author of this work has gathered it on the plains of Colorado, almost up to the foot hills of the high mountains. Professor Tracy says it is common everywhere in Missouri. It is here, as already noted, the smoother form begins. In Texas, it was found by Wright, so smooth that Professor Gray names the Texan form *A. glabrata*. It does not seem to care to travel much towards the east. Arthur finds it in Iowa, Coleman reports it as in the Southern Peninsula of Michigan, and Barnes collects it in Northwest Indiana. The author has seen it abundantly on the sandy shores along the southwest of Lake Michigan, where it often takes its place with others in forming sand-dunes.

EXPLANATION OF THE PLATE.—1. An enlarged flower, showing the single petal or vexillum. 2. Outline drawing of leaf, showing the small retuse terminal pinna. 3. A branch, cut in two sections, giving nearly its whole length from the ground.

WILD FLOWERS AND NATURE.

WILD FLOWERS.

My life is full of scented fruits,
My garden blooms with stocks and cloves;
Yet o'er the wall my fancy shoots,
And hankers after harsher loves.

Ah! why—my foolish heart repines—
Was I not housed within a waste?
These velvet flowers and syrup vines
Are sweet, but are not to my taste.

—EDMUND GOSSE.

PECULIARITIES OF BARK.—Mr. B. M. Young, Morgan City, Louisiana, says: "Having for a number of years noted a peculiarity of grafted pecan trees, I would like your opinion as to the cause of same.

All wood growing above the union of the graft is covered by a smooth, silver-gray bark, while that below the union is the natural shag bark of the pecan.

The line of demarkation becomes very striking when the trees get large, say a foot or more in diameter at the point of union. Now, why is it that the bark of wood from the scion does not become shaggy and of the same color as that on the original tree from which it was taken?

All varieties of the pecan change the form and color of their bark in this way when grafted."

This is a case where no student of plant-life would be justified in giving an opinion, without a critical examination of the subject before him. In a general way, it may be said that the usual explanation in text books used in colleges, that the clefts in the bark of trees are the result of mechanical law, from the growth of the wood, is erroneous. When a branch one or two years old is examined, small dots, often wart like, may be seen on the surface of the bark. These are cork cells. Each species of tree has its kind of cork cells and when they develop, they destroy the bark in the line of that development. Usually the development is in the same longitudinal line with the branch, —but occasionally, as in some birches and cherries, the development of the cork cells is in a direction round instead of along the branches; and this is the reason that the bark of these trees peels off in horizontal flakes.

But a striking peculiarity of these cells is that not only has each species of tree its own specific variety of cork cell, causing as it develops so many methods of rough bark that every tree has its own characteristic feature in this respect; but they vary in their times of development, and the bark continues smooth until the development occurs. Rough bark, caused by cork-cell development, therefore, appears at different times, in different species of trees. In some kind of trees, as in the common Spanish or American Sweet Chestnut, the cork-cells remain dormant for twenty years. In other words, it is twenty years before the chestnut tree loses its smooth bark, and assumes the rough-bark condition.

Coming back to the pecan, it can only be suggested as a possibility that the young branches have been grafted on a stock much older, which has reached its appointed time for rough bark, which the younger, grafted portions have not.

THE CALADIUM AS AN OUT-DOOR PLANT.—The beautiful caladiums with variously colored variegated leaves, which made such a beautiful show at the Columbian Exposition, are usually regarded as solely green-house plants, and to require a very moist atmosphere at that; but they are very successful when grown in the open air, providing the soil is damp and the situation somewhat shaded from the full sun. Indeed, when the proper situation can be secured, there are few plants which will give more pleasure under open-air culture.

STYLOPHORUM DIPHYLLUM.—This curious plant has not been found by Mrs. Tucker, in Spokane County, Washington, as supposed in the February number. The only plant of the poppy family found by her in that region was *Meconopsis heterophylla*. Of this, she has gathered specimens in Uncle Sam Mountain. The flowers are reddish-salmon, and poppy-like.

ADDITIONAL NOTES ON AMORPHA.—In addition to what has been said about *Amorpha canescens* in the main chapter, it may be noted that in the *Amorpha fruticosa*, the leaves have a number of pellucid, glandular dots of irregular sizes, scattered over their surfaces. These appear also on the calyx, giving it a strongly verrucose character. In the species now described, the dots are often scarcely apparent on the leaves; but the glands become a marked feature on the calyx. Morphologically, the calyx is but a set of modified leaves, and the lesson from the comparisons made here, are that characters prominent in the leaf may also appear when the leaves are modified to form a calyx; and even when nearly suppressed in the early normal condition, may appear prominently in the modified state.

The beautiful purple-blue of *Amorpha canescens* has already been noted in the extracts from the journals of early American explorers; but much of the richness is due to the spangles of gold among them, which the rich yellow anthers afford. After the pollen has been shed, or perhaps carried away by bees, which seem fond of it, the anther cases often become bleached, and this also gives an additional charm to the flower. The anthers push out one after another, and mature in succession, the first one to push being a little the longest, and the small vexillum does not finish its growth till after the last stamen has been fully formed. These facts may give a clue to its peculiar form, or want of form—its amorphous character. Like some compositæ, the lateral growth remains at rest, till the full length of the axial growth is reached, when the lateral development becomes active from the apex downward. So here the spiral growth uncoils backwards, as it were, and axial development ceases when the vexillum has been reached. The flowers seem specially arranged for self-fertilization. After watching the opening blossoms it is difficult to conceive how insects can aid in cross-fertilization.

SUCCESSION IN FORESTS.—I see that Mr. Tillinghast, page 6, January number, asks the old question, "How do the seeds of hardwood trees,—acorns, for instance,—get out of the ground?"

This same question has been asked so often and for such a length of time, that I rarely enter a pine forest, without its entering my mind. I doubt there being a pine forest, in the United States, in which oak trees are not to be found,—not only oaks in bush-form, that are patiently biding their time until the pines are removed by fire, the axe or other friendly causes; but tall oaks, bearing seeds, are to be found among them, and it is wonderful to note the progress the oaks have made during my observations in the past fifty years. Among the forests, I have explored and seen oak trees of bearing age, mixed with the pines, I will name the Green Mountains, both in Vermont and New Hampshire, the Adirondacks, the Alleghenies, in Michigan, Wisconsin, Minnesota, the Rocky Mountains, the Wasatch Mountains, the Sierra Nevada, the Coast Range, Arizona, Oregon and Washington, and from North to South, from the Canada and Manitoba line through Carolina to Southern Florida. The oaks are of inferior size in the Black Hills of Dakota and Arizona, but they are there among *Pinus ponderosa* and other species of conifers.

Would it not be advisable to ask your subscribers if they ever saw a pine forest in which bearing oaks are not to be found? If such a pine forest is to be found in the United States, it should be noticed as a "Natural Curiosity."

The northern limit of the oak does not reach the northern limit of the pine; but after the oaks drop out there are plenty of deciduous trees fighting for the space where the pines disappear,—at least as far as my observation has extended. "Nature abhors a vacuum," and it is interesting to notice that her substitutes are always in readiness.

ROBERT DOUGLAS.

Waukegan, Illinois.

BRACTS OF THE DOGWOOD.—Mr. R. D. Bullock, Upsal, near Philadelphia, calls attention to the fact that the Red-flowered Dogwood had frequently but two bracts instead of four, the past season. This is also true of the common White Dogwood. The so-called bracts, are not truly bracts, but the winter bud-scales which have made renewed growth in the spring. The two outer ones have been killed, and only the two inner ones left for renewed growth in the two-leaved cases noted. The dead bud-scales can be seen in their place under the ones which have renewed their growth, and become "involucral bracts."

A SWEET-SCENTED PAPAW, ASIMINA GRANDIFLORA.—A correspondent writing from Green Cove Springs, Florida, under date of April 15th, says: "We were charmed with a delightful odor which came from the woods. Subsequently, we found the fragrance came from a downy bush about two or three feet high. The flowers came out singly, at various places along the leafless branches. They were three or four inches across, of a greenish white color,

HYDRANGEA OTAKSA.—SEE PAGE 107.
(Grown by Mr. M. H. Walsh, gardener to Joseph S. Fay, Esq., Woods Hall, Mass.)

and so much like the Chinese magnolias we have at the North, both in appearance and in the delicious fragrance, that we concluded they must be some kind of a magnolia. A flower is enclosed."

These good observers ought to make good botanists, for the plant is a papaw,—a genus very closely related to magnolia—*Asimina grandiflora*. It is not generally known that the flowers are so delightfully fragrant.

ARRANGEMENT OF PETALS AND STAMENS IN IRIS.—Mr. Willard N. Clute, Binghamton, N. Y., notes: "In the MONTHLY, mention is made of the fact that petals, stamens and pistils of the iris are opposite one another. Do you not think that this can be accounted for on the supposition that one or more cycles of stamens or petals have been aborted? I should like to see further mention of this subject in the magazine."

This is the explanation usually given. In flowers, generally, there is a regular alternation in the floral series. If there be five divisions to the calyx, five petals and five stamens, these stamens, petals and stamens alternate with the divisions of the lower set. When a series of stamens are found opposite the petals instead of alternate with them, the presumption is that a lower series of stamens have aborted, and failed to appear.

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INTENTIONAL SECOND EXPOSURE

IMBECILES AMONG PLANTS AND ANIMALS.—Every one understands what is meant by the imbecile, when speaking of human beings. The mental development of the child is checked, and even when such a child reaches the age of manhood, it is still but a child in its feelings and wants; but it is not alone among human beings that the characteristics of imbecility are found. In almost all trees, the characteristics of the foliage or the habit are very different during the first few months of existence than they are in after life. There is a matured characteristic as well as an infantile one. The Tulip Tree for instance has its first set of leaves entire, without any appearance of the lobe or the truncate termination which it assumes in old age; but sometimes these juvenile characteristics will be maintained through life,—and then we have what is known as the *Liriodendron integrifolia*,—that is to say the Entire-leaved Tulip Tree. This is more particularly marked among evergreens. During the first year of the arbor-vitæ, pinus, cupressus, retinospora and similar plants, the leaves are heath-like, that is, extending from the stem quite separate and distinct; but occasionally there are individuals carrying these characteristics through life; and many of the so-called Japanese species are merely vegetable imbeciles. It is not uncommon for acute observers to find branches assume their adult form in many individuals in this imbecile class. Just as in the case of human beings there are occasionally instances where imbeciles assume matured characteristics. This is also true of the animal world. A friend of the writer has an aquarium in which tad-poles as well as other aquatic creatures are raised. As every one who is acquainted with the commonest events in natural history is aware, the tad-pole during its first season throws off its tail, pushes its legs and becomes a frog. In the case of the friend referred to, he has a tad-pole which thrust out its legs and then ceased to develop further. After three years it is still a tad-pole with its two frog legs, retaining its tail and in all other respects it is a tad-pole with the tad-pole characteristic intact. It may be termed a froggy imbecile.

FERTILITY OF PISTILLATE STRAWBERRIES.—Mr. Frank N. Tillinghast, Greenport, N. Y., observes:—"It seems to have been demonstrated by strawberry growers that, as a rule, pistillate varieties are more productive than the perfect varieties. This goes to show that greater specialization benefits the plant; probably because of the cross-fertilization caused by diœcism, and also because of the economy of energy in the pistillate individuals, consequent on the suppression of the stamens. Mr. Darwin has shown that there is a tendency for the flower of the strawberry to become sexually separated in this country, and may we not feel sure that this separation is a step upward in the development of the plant?"

Few varieties have exceeded in productiveness, the old Albany Seedling Strawberry, which was not a pistillate, but an hermaphrodite. We often have to take statements of "demonstrated facts," with some allowance.

It is one of the weaknesses of some of Mr. Darwin's positions, that he made deductions from a limited range of facts. It is not only in the strawberry, but runs through the whole range of vegetation, that there is a greater tendency to a separation of sexes in American species than in the plants of northern Europe. Had Mr. Darwin known this, he would reasonably have asked himself, why American species should need a "division of labor" any more than European ones.

STORIES ABOUT MALLOWS.—Some of the stories hatched by illegitimate writers on flowers, are pretty enough to be true; but alas! truth must prevail. Here is something about the "cheeses" children love to gather, and which will interest adults as well. It is from the facile pen of Newlin Williams:

"The mallows have been familiar to us since we ate the little cheeses of the roundleaved malva growing as a weed in the garden path. The hollyhock and the brown-eyed hibiscus, or bladder ketmia of the cornfield are its relatives. The seed of the latter is almost exactly the same shape as those of the abutilon, whose gray-ribbed pods, with its beaks, reminds one of a turbine wheel. I have heard it told that each of these wheel-like pods holds three seeds, one of which matures the first year, one the second and one the third. I find the fact to be that it has about thirty seeds, and all seemed gray and ripe as I thrashed them out into my palms from the lamellæ of the capsules." We must not believe all we hear.

GENERAL GARDENING.

A PLEA FOR THE CROW.

You call them thieves and pillagers; but know,
They are the winged wardens of your farms,
Who from the cornfields drive the insiduous foe,
And from your harvests keep a hundred harms;
Even the blackest of them all, the crow,
Renders good service as your man-at-arms,
Crushing the beetle in his coat-of-mail,
And crying havoc on the slug and snail.

—LONGFELLOW.

HYDRANGEA OTAKSA.—I enclose you a photograph of a *Hydrangea Otaksa* grown in the garden of Mr. Joseph S. Fay, of this place,—the dimensions of this plant are as follows:—Diameter at the base, 13 feet, height 7½ feet. It had 226 flowers and flower buds at one time. The photograph was not taken on the best side of the plant, as the same was not suitable for so doing. I will add, it is the natural habit of the plant, without stakes or tying.

The diameter of the tub in which it grew was 2½ feet; depth 19 inches.

We were awarded the Massachusetts Horticultural Society gold medal for four plants, in 1893, for superior cultivation.

M. H. WALSH.

Wood's Holl, Mass.

In connection with the account of the beautiful specimen illustrated on page 105, it may not be out of place to remark, that, the variety known as Otaksa is but a vigorous form of the common garden hydrangea, *H. Hortensia*,—and is of Japanese origin. Otaksa being a Japanese name.

CARE OF SHRUBBERY.—It is well, sometimes, to repeat advice, as it is not always properly understood when first offered,—and this is especially true of matters connected with the management of shrubbery. The practice of shearing bushes in the winter time has been repeatedly shown in MEEHANS' MONTHLY to be as destructive to the object aimed at as it is objectionable to good taste. The proper time to prune shrubbery is after the flowering is over, then all weak and puny branches should be cut out to the ground. In cases where the bushes are low, with such plants as spiræa, for instance, nearly all those which flower in the spring should be removed, and a new set of strong shoots suffered to come out near the ground. The result is a well formed natural specimen, which will bloom profusely the following year, and yet be kept within the limited bounds desired; or if the plant is not required to be kept down to small dimensions, but a large, vigorous bush is desired, still the summer pruning should be the rule, for if the whole branch be not cut out to the ground, the vigorous upper shoots should be checked by having the very strongest ones pinched back. No amount of theoretical advice, however, will enable one to do just the right thing. Grand success must come from experience and observation. If we keep in mind that very strong shoots rob and weaken those not as strong as themselves, and that this vigorous growth is to be checked as it is going on, we get the chief element in success. All the rest must come from experience, and the rule can be applied to each particular class, according to the object aimed at.

SPRAYING FRUIT AND ORNAMENTAL TREES.—Certainly, the path of progress in horticulture has brought the cultivator to no more pleasant places during the few past years than to those teaching of spraying trees with insecticides and fungus destroyers. Instead of an aggravation, resulting from the fight with mildew and molds, and the struggle with pestiferous insects, the spraying solutions give us speedy relief.

The knowledge of the value of spraying is, however, limited, and, every effort to extend it is heartily welcomed. A treatise on the subject, before the conductors, issued by the P. C. Lewis Manufacturing Co., of Catskill, New York, it is a pleasure to say, is full of good things relating to this subject. Though written to give away, and to help sell their goods, it is none the less instructive on that account. Spraying is yet in its infancy.

ORNAMENTAL VEGETABLES.—It is essentially an American characteristic to desire to combine beauty and utility,—hence any fruit that is handsome has an additional merit to general good eating qualities. Handsome vegetables are also valued. Superb effects can be had on large lawns by the use of ornamental leaved beets. The accompanying illustration, for which we are indebted to Messrs. Vilmorin-Andrieux & Co., will give some idea of one

ORNAMENTAL-LEAVED BEET.

form. There are varieties with many shades of color—some golden, others pink or white. Even in a vegetable garden, the beauty of these beets give an interest. The thick, succulent leaves make good eating. Some people preferring a dish of them to asparagus.

PUBLIC SQUARES.—Mr. Doogue, City Gardener of Boston, says:

"In regard to the public squares of Boston, let me say a word. I do not think that you will find in the entire country similar places of resort which are so badly treated by some of their visitors as those of this city. Base ball, polo and other games are played on them, the seats are smashed and other depredations of a vandal character are constantly being done. Take Thomas Square, in South Boston, as an example. It will take at least 50,000 square feet of sodding to replace the grass which has been destroyed in the last season. The figure on Independence Square has been badly mutilated, and on Sullivan Square, in Charlestown District, the fountain, representing the seasons, has been injured. For the Common, it will take at least two acres of sod to repair the injury done along the walks from people stepping off them to get dryer footing, which would not be the case if these walks were asphalted."

Small city parks should be more than breathing places, or mere beauty spots, as the senior conductor of MEEHANS' MONTHLY has learned by recent experience. He has been the means of adding to Philadelphia twenty-seven of these small parks, comprising in all 775 acres, during the past ten years, and therefore "knows whereof he speaks" when he says that their use as playgrounds should never be lost sight of. There ought to be no occasion for re-sodding when the real needs of the people are foreseen and provided for.

GREEN-HOUSES IN SUMMER.—Many persons who have small conservatories attached to their dwellings, or house-plants in bay-windows, are at a loss to know how to care for the plants in the summer time; but most of these do well on stands under the shade of fences or large trees. All the care necessary, is to see that they have water when they require it; but there are some things which are best to keep under glass the whole season through. What is known as "air plants" from Florida, do much better when kept under glass the whole season, than when put in the open air, and the reason for this is that the glass confines the moisture and secures the damp atmosphere in which these plants love to grow. Many orchids require to be kept under glass in summer, for the same reason. The only trouble is that plants kept under glass in hot weather are liable to become infested with red spider and other small insects; but the methods for the destruction of these insects are so easily applied, that few feel much difficulty in waging war against them.

MERTENSIA OBLONGIFOLIA.—The pretty native plant of the Forget-me-not family, *Mertensia oblongifolia*, Mrs. Susan Tucker, of Cheney, Washington, finds to be a very satisfactory room plant. Some were potted last fall, and were very interesting through the winter season.

LIGHT AND SHADE IN LANDSCAPE GARDENING.—Some of the most pleasurable effects from trees and shrubs come from the contrasts of light and shade at certain portions of the day, and the good landscape gardener never loses sight of this in planting a new place. We can often get good lessons from Nature in this line. In looking over some photographs taken by a friend, who is fond of travel, there was one, which is reproduced here, of a view on Newtown Creek, Bucks County, Pennsylvania, which beautifully illustrates this. The light

VIEW ON NEWTOWN CREEK, PENNSYLVANIA.

and shade give the chief beauty to the picture; and it is chiefly the Red Maple on the right, and the Beech on the left, that furnish these different characters. Only for these two trees, the scene would be a very common-place one. The hint will not be lost on amateur gardeners desirous of the most pleasurable results from their grounds.

THE CEMETERY ROSE. — The catalogue of Green's Nursery Co., of Rochester, N. Y., contains a large amount of usefully instructive matter,—indeed, the catalogues of large nurseries and seed houses are getting to be among the most useful vehicles of horticultural information. In this one, we note that the common name of the old rose, Madame Plantier, is the Cemetery Rose, chiefly on the grounds of its popularity for use in cemeteries. The rose belongs to an old class, now nearly gone out of cultivation, known as the Hybrid China, a class of roses so hardy, that the plants are able to get through our severest winters, without injury. Unfortunately, on account of their blooming but once a year, they have become, in a measure, ignored. This popular variety is about the only one that is left to cultivation by any specifical name. Most of the roses of this class have a dark color; but this particular one is white. The flowers are borne in very large clusters, although each individual flower is comparatively small. The large number produced enables the variety to make a great display. It is comparatively dwarf, and this gives it a great advantage as a plant for the decoration of graves.

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INTENTIONAL SECOND EXPOSURE

CARE OF STREET TREES. — Mr. James Stewart says:

"In your February number, Wilmington, Del., is to take care of her street trees. The bold man in Memphis, Tenn., tried to have every tree in that city cut down."

Some few years ago an ordinance was introduced into the City Councils of Philadelphia to cut down all the street trees, on the ground that they obstructed the light from the gas lamps, but the ordinance never got through the committee. Some trees have been cut down because they interfered with the view of the sign boards of business houses. Some beautiful trees were cut away around a school house, because the roots insisted on stopping up necessary drains. A number are cut down because some great man has been taught that they breed microbes, interfere with the sun, create dampness, and for many other reasons. A first-class City Gardener does not ignore these prejudices, but understands how to shape things so that the advantages of the tree may prevail over all. All cities should have a City Gardener, especially charged with the care of city trees.

BEGONIAS FOR GARDEN DECORATION.—It is now getting to be well understood that many plants that it was thought could only be grown under glass, do remarkably well in our climate under summer shade. The begonia is especially suited to this summer work. The writer came across a little piece of rock-work constructed under the shade of some large trees, in which the whole mass of rocks was completely covered with species of begonia. Every night, or nearly every night, water was showered on them through a hose from a hydrant. Nothing could exceed the beauty of this mass.

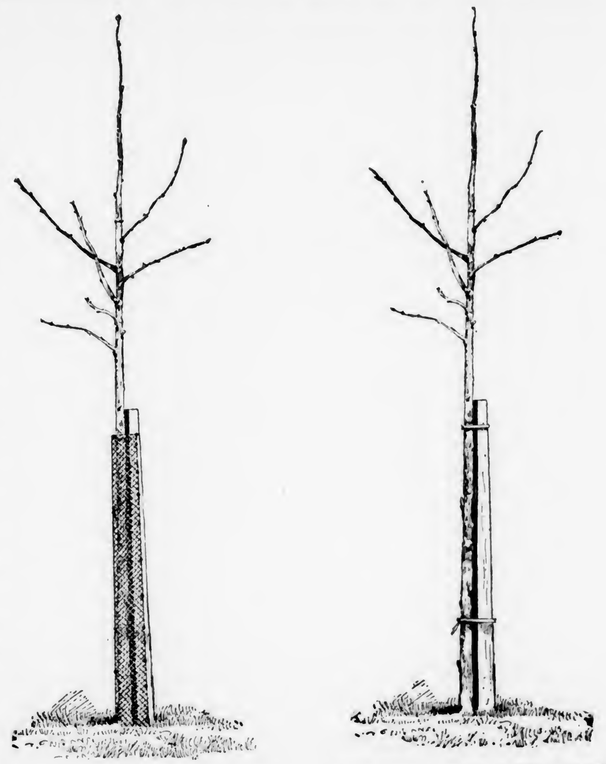
GLADIOLUS.—A few years ago, there was a great wave of popularity in favor of the cultivation of the gladiolus; but during the past few years, there seems to have been a falling off, judging from the reported sales by those who deal in flower roots; but there seems no reason why this should be. Possibly, there may be objection to the fact that the ground occupied by this plant seems so bare of plants until the gladiolus itself opens in late summer. But this can be remedied by planting something else with them, so that when the latter dies away, the gladiolus can succeed them. For this reason, they are often planted with tulips, hyacinths and other spring-flowering bulbs. The gladiolus soon follows into bloom after the other plants decay. A friend of ours plants them in the spaces between rhododendrons, and they add very much to the rhododendron garden, by blooming after the other flowers fade. The bulbs can easily be taken up and preserved through the winter.

DIDISCUS,—A POISONOUS SET OF PLANTS.—Some pretty annuals, under the name of *Didiscus* or *Trachymene*, are in cultivation. Dr. F. von Muller, of Melbourne, Australia, has recently described a new species as *Didiscus Croninianus*, and takes occasion to observe that all the species are noxious, cattle having been poisoned by feeding on *Didiscus pilosus* and *D. glaucifolius*. In a note, Baron von Muller suggests that these plants will early escape from our southern gardens to southern pasture grounds, and may be a serious annoyance. It is much easier to watch intelligently for the first appearance of these pests, than to let them run riot, and then beg Congress for millions to uproot them,—a feat which has then become impossible.

THE CHINESE ARBOR VITÆ.—A large number of evergreens, usually hardy, have been seriously injured by the winter blizzards in various parts of the country. Strange to say, none of the varieties of the Chinese arbor-vitæ have been injured in the slightest degree. This plant, *Biota Orientalis*, is not nearly as often seen in gardens as it deserves to be. When suffered to grow bushy, the branches fall apart, and the plant is unsightly; but when trained to single stems, it makes a lovely small tree.

CHRYSANTHEMUM CULTURE.—It should be borne in mind, that though plants have to be pinched back a time or two to render the plants bushy, every successive crop of shoots will be weaker than their predecessors. If the pinching back is done after mid-summer, only weak shoots are produced, and this means weak flowers. Another point to be cared for is to preserve the old leaves as long as possible. When the plant loses its leaves early, the flowers are liable to be particularly small.

A CHAPTER ON TREE GUARDS.—Frequent occasion has been taken by MEEHANS' MONTHLY to educate the community in regard to the absurd and injurious friendliness in pruning, by which so many valuable trees are destroyed. The same kindly feeling is exercised in the shape of tree protectors or guards. It is questionable whether the presence of these guards has not destroyed more trees than even their total absence would have done. Anything that is driven firmly in the ground is in utter forgetfulness that a tree must bend to the wind. The trunk of the tree rubs against the upper portion of the guard, injuring the bark. In many cases, during heavy gusts of wind, trees of considerable size have been known to break completely off by being driven against the upper portion of the guard. The most perfect protector is one that will bend when the tree bends. For some years past, Germantown planters have simply encased the trunks of their trees, as high as a horse can reach, with galvanized iron netting, and attached it so that it could be let out a little as the tree grows. We had thought this peculiar to Germantown, and were about to prepare an illustration for other readers of MEEHANS' MONTHLY, when the instructive circular of that especially useful body, Tree Planting and Fountain Society of Brooklyn, came up, with a sensible recommendation of this very thing. It is but fair that they get the credit of pushing the good idea; their cut is therefore used instead of one by this magazine.



Tree Support with Wire Guard. Tree Support without Wire Guard

TREE GUARDS OR PROTECTORS.

The only comment may be on the staking. A stake planted firmly in the ground will often lead to a rubbing as badly as when protected by an old fashioned "guard." A tree, properly planted, never needs a stake. If the earth be properly pounded in about the roots of a transplanted tree, it will never blow over,—and if all the crevices have been properly filled, the tree cannot settle one side more than another after or during a rain storm. If a transplanted tree leans to one side after planting, and leans subsequently under a storm, it is good evidence either that the tree had not been dug for transplanting with all the roots it should have had,—or that the earth had not been properly packed about the roots and pounded in as firmly as good planting required.

SCALE ON ABUTILONS.—A correspondent has tried lime-water to destroy scale on abutilons, without effect. She would be very glad if any one, who has really tried something that is easily applied, and has been effectual against scale insects on house plants, would give their experience.

THE WINTERS OF NORTHWESTERN IOWA.—Mr. H. A. Terry notes that numbers of pretty plants that add pleasure to eastern gardening are denied to the people of his section, so far as flowering is concerned. Among these are *Corchorus*, *Deutzia*, *Euonymus Europæus*, *Forsythia*, *Hibiscus*, *Prunus Pissardi*, *Pyrus japonica*, *Rhodotypus*, *Styrax*, *Viburnum plicatum*, *Weigela*, *Xanthoceras*. Most of these are hardy in root, but kill back in top, and never bloom unless protected by snow or artificially.

BEECH HEDGES.—R. P. Jeffery & Son, Bellmare, Long Island, N. Y., say:

"Speaking of American Beech hedges, we have one which has been a perfect hedge for ten years or more, kept down to five feet. In places it is shaded by large apple trees, yet it does not die out under them. The growth, of course, under the trees is not as strong, yet it cannot be noticed in summer."

A little surface manure to the weaker ones would bring them up to their stronger companions.

THE OLIVE IN CALIFORNIA.—It is only of recent years that the olive has been introduced as a large and paying crop in the horticultural features of California; and it is another illustration of how long it sometimes takes people to see advantages which abundantly exist about them. The *Pacific Rural Press* states that in some parts of California, there are large trees over a hundred years old, that were introduced by the ancient missionaries, from which it ought to have been easily seen how readily the olive would succeed on the Pacific coast. It gives a picture of one which is nearly as large as some of the oaks in the eastern section of the country, although it does not give its dimensions, but judging from the pictures of human beings standing around, it may be judged that the trunks are seven or eight feet in circumference.

HARDY EVERGREENS.—When we speak of hardy evergreens we have to bear in mind that there are two active causes of injury during the winter season. One is cold winds, and the other a specifically low temperature. Light, feathery trees, such as the Hemlock Spruce, are often badly injured in winter, even when the temperature is not very low, by being exposed to heavy winds; while the stiff, sturdy growing kinds, such as the Austrian Pine, for instance, will endure a low temperature for a considerable length of time, even under a stiff, wintry breeze, without the least injury. In fact, any variety of evergreen that has a very close habit of growth, and does not easily bend its branches to the wind, is hardier than one of looser character. Take, for instance, the Irish and English Yews. The Irish Yew will oftentimes pass through a winter without injury, while the English Yew will severely suffer, and the reason is that the Irish Yew has a stiff, compact habit of growth which prevents the wind from getting through the branches. An Irish Yew will stand in a snow drift as in a basin, the current taking the snow all around instead of through it, while the snow will drive completely through the more open English Yew. In other words, the Irish Yew is more hardier than the English Yew on account of its wind-resisting power. Planters should bear in mind in selecting trees for the ornamentation of their grounds, that the strong, sturdy kinds should be placed where the wind is likely to cut more keenly in the winter time, while the most feathery varieties should be in a position of shelter.

NEW OR RARE PLANTS.

THE FRUIT OF THE ALLAMANDA.—There is in cultivation a beautiful class of plants known as Allamanda, a climbing set, having very large showy yellow blossoms, and of the family of plants known as Asclepiadaceæ. This class has rarely the power of fertilization without insect agency. As a result, they rarely bear fruit under cultivation; but one has fruited in France, and is figured in the *Lyon Horticole*, and seems to bear an exact resemblance to a large chestnut burr. Those who are quick to see the uses of prickles will have to study out what are the uses of this prickly burr in this genus of plants.

POLYGONUM SACHALINENSE.—So much is being said of this plant, that it may be well to repeat that its specific name is derived from Sachalin Island, in a part of Asia, which is somewhat of a desert, though there are damp places on which this species of knotweed grows. Its habits and general character is so nearly allied to another Asiatic species, *P. cuspidatum*, that only an acute botanist can see the difference. The latter has proved a very ornamental plant in American gardens,—but is such a terrible pest, by reason of its wide spreading, creeping roots, that ornamental gardeners keep shy of it.

COBÆA MACROSTEMMA.—Under the name of *Cobæa macrostemma*, a species from San Salvador, in Central America, has been introduced to European gardens, and may be useful for American summer gardening. The foliage is like our common cobæa; but the stamens and style project for more than double the length of the corolla, and presents a remarkable appearance.

LYCORIS SQUAMIGERA. — Mr. Isaac Myer, New York City, says:

"*Lycoris squamigera*, called, also, *Amaryllis Hallii*, is hardy in this country. A hole should be dug about two and a half feet deep, the bottom for six inches filled with broken bricks or stones, and good rich loam on top. The bulb should be planted at least ten inches deep, in the fall. In early spring it will throw up about six bright green leaves. These die down, and in August, a thick flower stem arises about two feet high. The blooms are three or four inches long; the flowers are fleshy, pink, bell-shaped and fragrant."

THE HARDY FLOWER GARDEN.

DOUBLE JONQUILS BECOMING SINGLE. — A correspondent says: "I send you, herewith, four little flowers of what are called at our old place down in Maryland "double jonquils."

There is something that seems to me a little queer about these flowers, and I would like to have your opinion on the subject.

The original bed of them has been there at least seventy-five years, and always bears double flowers, and perhaps 100 or more. As the bulbs increase, they have become crowded together, and of course the bed is extending. Still, in the original bed, there is only very occasionally a single flower.

The singular thing about them is that any removal, even of a sod of the bulbs, causes them to go back to the single flower. I some years ago brought some of them up to my place at Germantown, and they came up single. A removal to another spot, within a few feet of where the original bed is, causes them also to go back to the single type.

The bed is rather a celebrated one in the neighborhood, and several of the neighbors have tried to transplant them, always with the same result,—they are no longer double.

Now, what I want to ask you is: why is this so? Will they resume their double form when they get crowded together as they are in the original old bed? Is it, therefore, that the doubling is caused by the fact of the roots being crowded?

The oldest inhabitant of the neighborhood tells us it has always been the wonder of the whole neighborhood, the fact that only in this one spot would the double jonquil grow.

I would like very much to know what you think about this little thing. It seems a rather singular thing to me that they should all of them run back when moved."

That plants usually producing double flowers, will occasionally revert to the single condition, is well-known. Those who raise tuberoses largely have frequently to weed out the single ones that now and then appear. But we have never known the reversion to occur under regular rule as described in this note. Has any one had a similar experience?

BEAUTY IN THE GARDEN.—A correspondent writes that one need not wait till the flowers bloom to see beauty in the garden. It has an interest for him at any season of the year, especially when the leaves are pushing up from the ground in spring. He thinks that no gaudy flower will equal in interest and beauty the unfolding leaves of the Columbine. Without granting all he claims, it must be conceded that his enthusiasm in this line has very much to sustain it.

HARDY CHRYSANTHEMUM.—Pitcher & Manda, the well-known florists of Short Hills, N. J., call attention to a fact not generally known, that there are two distinct species of this popular flower in cultivation. The common large flowered varieties, which have been for over half a century in cultivation, are derived from the species known as *Chrysanthemum Indicum*; but those with small flowers which we know as Pompons, and which were introduced by Mr. Fortune, from China, about 1840, belong

to an entirely different species, and have proved to be perfectly hardy in our climate, while the ordinary Chinese Chrysanthemum has not. There is an immense variety of form and color among this class, and there is no reason why they should not become as popular in herbaceous flower gardening as the phlox or similar plants.

HERBACEOUS PLANTS IN SUMMER. — The great majority of hardy perennial flowers are natives of woods or grassy places where the earth is shaded from the hot summer suns. When they are removed to open borders they suffer seriously from summer heat. It is, therefore, good practice, in these open sunny situations, to have the ground mulched,—that is to say, covered with something like decayed leaves or half-rotted straw, or anything that will prevent the scorching rays of the sun on the earth. Herbaceous plants do not care so much for bright sun as they do for cool soil at the roots. For the same reason, a loose, open soil is better for growing herbaceous plants than soil of a heavier character, because having more air spaces, it is cooler. In short, it is cool soil more than shade that herbaceous plants require.

RENEWING HERBACEOUS PLANTS.—There is a very slight difference in nature between annual and perennial plants. An annual dies chiefly because the effort to produce seeds exhausts the vital power. Many annuals can be made to live for a number of successive years if the flowers are pinched off and the plants not allowed to bloom. This is well known in the case of the common mignonette. Plants have been made to live for a number of years by picking off the blossoms as fast as they appear. The petunia is another plant which can be made to live an indefinite number of years by preventing it from flowering for several seasons. Even the sun-flower will live if the heads be cut off and the plant prevented from flowering. There are some herbaceous plants that are so nearly annuals that, if they flower very freely, they are very apt to die out entirely. The foxglove is a well known plant which is of this character. In these cases it is best to have several plants, and let some of them go to seed, while the other plants should have the flower heads cut off as fast as they fade, so as to prevent seeding. In this case the plants readily assume a perennial character. Those who are very fond of herbaceous plants, and make themselves well acquainted with their characteristics and habits, always save a few seeds of every kind, so as to be prepared for the loss of any which may fall back on their annual characteristics. If the seeds of these perennials are sown in the fall, they will make plants strong enough to flower, in most cases, the ensuing year.

PROPAGATING RARE, HARDY PERENNIALS — Many perennial herbaceous plants are propagated by taking up the roots and dividing them in the fall of the year. Others are easily propagated by letting them seed and sowing these seeds ; but even these methods of propagation are not always rapid enough for the desired increase of any particular plant. It is not generally known that plants can be made by cutting up flower stems. For this purpose, the flower stem is allowed to grow up to a blooming point ; but when that is reached the flower buds must be entirely cut away. This throws more vital energy into the flower stem, and well-developed buds form in the axils of the leaves. In a few weeks, after the flowering heads have been pinched out, the flower stalks may be separated for cuttings. Pieces with two or three buds are sufficient. In this way such plants as the hardy phlox may be very rapidly increased. The various kinds of lilies can be propagated in the same manner.

HARDY PHLOXES.—Possibly no class of hardy perennials is better adapted to American flower gardens than the general varieties of the hardy phlox. In their native places of growth they are usually found in damp situations ; but it is found by experience that they take well to the comparatively dryer ground in our flower borders. They wither, to some extent, under a very hot sun, but generally come up again with the dews of the evening. A great deal of interest may be found in trying to raise new varieties of the hardy phlox. Where three or four kinds have been growing together the pollen intermixes freely, either by the wind or by bees, or perhaps partly by both, and the young seedling plants will produce flowers of a great variety of form and color. Nearly all of the named varieties in the catalogue of Old World florists have been produced in this way. There is a very wide range of color in the different varieties of these plants, and so many different forms of the same shade of color that the varieties seem endless. One may also get good experience in breeding to a certain standard when trying to improve the phlox. The chief effort of Old World growers is to have plants as dwarf as possible, with large, heavy leaves, the flower stalks bearing large trusses of bloom, and each individual flower to have a perfectly round outline, but broad and overlapping. For this purpose varieties are selected which already show a tendency in that direction. By sowing seeds of such for several generations, the habit becomes fixed, and the race is successfully established.

CAMPANULA GRANDIFLORA.—A large class of Campanulas, the bell-flower family, have fleshy roots, which enable them to withstand heat and drought pretty well. In consequence, they are among the most valuable of border flowers. Many of them come into bloom about midsummer and continue until autumn. One of the best of these is a Siberian species, known as *Campanula grandiflora*, which has large bell-shaped blossoms an inch or more in diameter. It is a native of Siberia. The ordinary form is blue ; but there is a white variety very common in cultivation. Sometimes it presents flowers striped blue and white in the same blossom. It usually grows to a height of about two feet. Recently, a very dwarf and free flowering variety has been introduced from Japan. It is known as the variety Mariesi, having been introduced from Japan by Mr. Maries, the collector for the Veitches, of England. This dwarf variety is especially valuable, because it has a more bushy character than the original species. The stems are seldom sufficiently strong enough to be self-sustaining, and hence the character is very different from the upright form hitherto common in our gardens.

FRUITS AND VEGETABLES.

STRAWBERRY, LADY THOMSON.—The Lady Thomson Strawberry is being introduced among strawberry-growers, by Mr. John R. Neflin, of Norfolk, as one of the most productive for that region. He states that, from one acre, 6,000 quarts were gathered within seven days, from five pickings. It was raised by a Mr. Thomson, in Wayne Co., North Carolina.

TREE CRANBERRY.—Mr. Green, the well-known nurseryman of Rochester, N. Y., trains the cranberry up to a single stem, allowing it to reach several feet high before forming a head. In this way, the bright red berries, which give the plant so much interest in ornamental gardening, show off to great advantage. Although called a cranberry, the plant is really one of the *Viburnum* family, indeed, is the parent of the old-fashioned snowball, the latter being merely a barren form of the species. The bright red berries are edible when made into sauces or preserves.

AN AGED ENGLISH OAK.
(From *Gardeners' Chronicle.*)

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INTENTIONAL SECOND EXPOSURE

STRAWBERRY CULTURE.—There is a great difference, as to the best method of growing strawberries, between the amateur grower and the one who cultivates for market. Almost all horticultural writers, in garden periodicals, of course view the matter from the stand-point of the greatest product at the smallest cost in cash. If the grower for market finds it more profitable to have a variety that will produce an enormous crop in two or three picking, than to have that crop scatter over a long time, and a variety that may not be quite so excellent, he will take the fruit that is more profitable than the one which gives more labor in picking, though the fruit may be inferior. In the cultivation, the fruit grower for market usually has the plants set out so as to grow close together in one long row, while the amateur cultivator would find it more to his interest to cut off the runners as they grow, and have the plants in hills, that is to say entirely separate—one plant from another. But this requires more care, and in a certain sense more cost, for the plants when grown in this way must have some shading material placed around them. The strawberry does not mind hot sun, but the leaves insist on having the earth cool in which the plant grows. This covering, or mulching as it is technically called, is also of use in preserving fruit from getting splashed with earth by the falling rain. Those who desire the largest, sweetest and best strawberries, without caring for a little extra labor and cost, always prefer the hill culture.

POTATO CULTURE.—It may be well to remind the potato grower of what has been brought to his attention in former issues of MEEHANS' MONTHLY, that the potato's greatest enemy, in these modern times, is the stem borer. A little wevil, no larger than that which bores into the garden pea, deposits an egg in the stem of the potato, just beneath the surface of the ground. This produces a little worm which works sometimes upward, but generally downward; and the result is that the stem becomes so weakened that a few days of warm weather dries it up before the tubers have become much larger than walnuts. Generally no attention is paid to this, and the insect, after maturing, leaves the stem and enters again into the ground, in order to pass its time until spring as a chrysalis. Some growers, who understand that their plants have died from the effects of the borer, and not from dry weather, burn their stalks after digging the crop; but if true that the larvæ have mostly left the stems, no good is gained by the burning. It would probably be a safety to have the potato sets dredged with Paris-green, before planting; and if one would take the time to place a little Paris-green around the potato stalks as soon as they appear above the ground, it would doubtless be an additional protection, as the beetle probably feeds on the potato leaves, The plants themselves, when young, might also have the application of Paris-green. With a little care in these particulars, a full crop of potatoes could in all probability be secured—so far, at least, as this great potato enemy is concerned.

PHELLODENDRON PERTUOSUM.—In the first volume of MEEHANS' MONTHLY appears an illustration of this remarkable plant, it being probably the only one of the family of *Araceæ* that can bear the distinction of producing edible fruit. It has only been known, so far, through its cultivation as an ornamental plant in conservatories; but the *Southern Florist and Gardener* has a correspondent in Florida who states that it is being extensively cultivated in the open air in the extreme south, and that it is popularly known there under the name of the Cerimon. Although originally described under the botanical name above given, the name is not adopted by Index Kewensis, *Monstera deliciosa* being the name used. This will probably come into general use.

DISEASE IN CHESTNUT TREES. — French journals state that a disease, called in France, "Javart," has appeared among the chestnut trees in France, and is doing considerable injury. It appears on the bark of the young shoots about the time when the branch is about to complete its growth for the season. The first appearance on the bark is like a bruise, and a short time afterwards, it becomes dry and cracks into thin plates. It resembles, in some respects, the canker in the apple tree. Two French microscopists, Prillieux and Delacroix, have found that the disease is due to a microscopic fungus of the genus *Diplodina*.

JAPAN PLUMS.—Whoever plants plum trees generally has fair crops for several years after the trees commence bearing. But the great enemy of the plum, the curculio beetle, eventually finds them out, and unless the tree receives assistance from the orchardist, the plum crop is a failure. Just now there is much interest in the Japan Plums, and those who are growing them report that they are free from curculio; but as this is the experience with most varieties of plum, as already stated, it will not do to conclude that the curculio will not injure them. Some specimens of plums have been exhibited on which curculio marks were visible, and yet the plum perfected, and this has been taken as an indication that the attack of the curculio will not injure these plums; but it is by no means uncommon to find in an ordinary plum tree, fruit so marked, which did not rot. The explanation of this is that the beetle did not deposit the egg after making the mark, or that the egg failed to hatch to a larva, in which case there is no reason why the plum should rot. If any one has time to give a little attention to plum trees, by shaking off the plum wevil before it has deposited its egg, or perhaps by spraying the trees with the various solutions recommended, it is very easy to get a crop of plums; but labor of this kind is usually not convenient, except where there are large orchards and one person can be employed regularly and continuously to do the work. It is by regular attention of this kind that the plum growers of New York State have made the culture of that fruit so profitable.

THE ENGLISH SPARROW.—Californians are comforting themselves with a belief that the English Sparrow will never be a great pest to the fruit grower in their part of the country, from the fact that the towns are distantly apart. They have an idea that the sparrow is completely a city bird, and will not wander far into the rural districts. When an orchard occupies one whole square mile, it is not believed that the sparrow will wander into such a lonely region. It must not be forgotten, however, that the love of life, which is so strongly implanted in every living creature, is always a strong inducement for such creatures to change their habits and their ways. The English Sparrow, in its own country, builds its nest in holes in ruins, and in stacks of hay or grain, even taking to the thatched roofs of old buildings, or perhaps the ivy-covered walls of churches or old castles. When these birds were first brought to Philadelphia, and they found no old ruins, nor anything like the conditions under which they had been in the habit of building in their own country, they took to making nests in the trees of the public squares, just as other birds do. The instinct of self-preservation is a great factor in the change of habit of any or all creatures.

ROOT FUNGUS IN TREES.—A correspondent states that a peach tree standing near a dwelling, was entirely cured of a disease known as "yellows," by having boiling water poured around it. This fact has been known for many years past, not only in connection with the fungus which produces the disease known as the "yellows" in the peach, but also in connection with similar diseases in other trees, which are also the result of root fungus. The hot water cools a little before reaching the roots; but it is sufficiently hot when it reaches the root, to destroy the fungus, without injuring the root tissue. Unfortunately, a remedy of this kind is scarcely practicable in large orchards, or where peach growing is done on a large scale. For a few trees, in small yards, where they are convenient to the hot water range, no practice can induce healthier fruit trees than an occasional pouring of hot water around them.

LEHIGH STRAWBERRY.—The Lehigh Strawberry is a new variety introduced by W. B. K. Johnson, of Allentown, Pa. It is a seedling of the Crescent, which was fertilized by one of a half dozen other sorts grown with it. It is said to be extremely productive. In 1894, a patch of three-year old plants, 226 feet by 21 feet, or 4746 square feet, yielded 292 quarts of berries, from one day's picking. This same patch, together with a one-year-old bed, containing 9,600 square feet, or 14,346 square feet in all, yielded in eight pickings, 5,248 quarts. This is an extraordinary amount to gather from the space occupied. The berry is larger and of a brighter red color than the Crescent, and is more pleasant to the taste. The foliage is good and strong, and of large size. It ripened in 1894, on the 26th of May.

BIOGRAPHY AND LITERATURE.

GENEROSITY.

The very flowers that bend and meet
In sweetening others grow more sweet.
—Oliver Wendell Holmes.

History of the Garden Pea.—"Although authorities affirm," says the *Gardeners' Chronicle*, "that the true origin of the pea has been lost in obscurity, certain it is that several kinds were largely grown by the Egyptians, the Greeks, and the Romans. Its introduction into this country is somewhat mysterious, some of our old time writers stating that it came from France, others from Holland, and there is no doubt it found its way to Britain through these countries, becoming acclimatized according to local surroundings.

It was not until the reign of Henry the Eighth that we learn of its cultivation in gardens."

P. J. Berckmans.—Belgium was, for many years, the great home of improved pear culture. It was even enough to say that a pear was "a new Belgian variety" to get for it a demand at once to popular favor. A generation ago Dr. Louis Berckmans, a gentleman of superior education and prominence in Belgium, decided to make America his future home, and brought with him that love of fruit culture, and especially that interest in pears, so prominent in his countrymen. He settled at Plainfield, in New Jersey. He was one of the intimates, and one might also say coadjutors, in helping along the knowledge of fruit culture, which at that time was illustrated in the person of Dr. Wm. D. Brinckle, of whom all who have known of the Brinckle's Orange Raspberry will have some pleasant remembrance. In 1857, on account of the severity of the northern winters, Dr. Berckmans moved his family to Augusta, Ga. The son, Prosper J. Berckmans, has inherited his father's love for fruit culture and horticulture in general, and is to-day one of the best known and most highly esteemed pomologists, as well as for the interest which he takes in every matter connected with the advancement of horticulture. He was born in Belgium, at Aerschot, near Brussels, in 1830, and was long enough there, before his father moved to America, to obtain the degree of Bachelor of Arts. The famous *Album de Pomologie*, of Bivort, one of the most famous of all illustrated pomological works, had considerable aid from young Berckmans, although then but eighteen years of age. He has recently been re-elected president of the American Pomological Society, with general good wishes from friends all over the Union, that he may long retain health and strength to occupy the position he so aptly adorns.

The Study of Mosses. — Anyone armed with a good pocket-lens may derive much botanical pleasure, even in the severest winter, by the study of mosses. These insignificant little plants deserve as great attention as the trees of our forests or the flowers of our fields. Mrs. Elizabeth Britton, of Columbia College, New York, is the leading authority on mosses to-day, in America, and has, what is not common among scientific people, excellent ability in bringing scientific matter down to a degree admitting of a clear conception by the popular mind. In a monthly magazine, called *Practical Microscopy*, published at Portland, Conn., she is giving a series of articles on how to study mosses. The articles are beautifully illustrated by magnified drawings of the different species. Possibly no more useful work in connection with the knowledge of mosses has been issued in this country.

Jean Francis Boursault.—There are few more valuable hardy climbing roses than the crimson Boursault. Little is known of the raiser, Jean Francis Boursault, but *Garden and Forest* for January 25th, has a brief biography. He raised the rose from the species known as *Rosa alpina*. He was a wealthy amateur gardener, born in Paris in 1752, and died in that city in 1842. An everblooming Boursault, would make the raiser famous.

Horticulture in Public Schools. Superintendent of Public Instruction for the State of Pennsylvania, Dr. N. C. Schaeffer, in a recent address, states that in France there are no less than 50,000 little gardens attached to their schools, and he thinks that the reason why there are not more of these beauty spots in connection with our public schools is from the lack of public sentiment in that direction, and the lack of knowledge on the subject, by teachers. He intends to have school gardens attached to the Pennsylvania State and Normal Schools, where teachers can be properly instructed in sufficient gardening to look after them. Whatever may be the condition of affairs in other parts of the State, in the first school district, which comprises the City of Philadelphia, it would be the janitors who ought to be instructed in horticulture, and not the teachers, as it is they who have the charge of all the surroundings of the public schools. In many of the schools in Philadelphia, the teachers are now giving the children lessons in the line of botany and horticulture, by growing seeds in the school windows, and by object lessons from the plants themselves. It does not require any very high degree of education to train the eye to look closely at what it observes, and very successful work in this line is done by teachers who never had any instruction in the normal schools, as to the elements of botany. Indeed, botany or horticulture, as taught by books alone, seldom makes any lasting impression on students,—they will learn more in a few weeks by actually observing how plants grow, or by studying and comparing plants and fruits that they may casually gather in a few hours, than by studying botany or gardening as diluted by the text-books, for a month.

Les Fleurs de Pleine Terre,—Prepared by Edouard André, and published by Vilmorin-Andrieux & Co., Paris, France.

Those who read French will enjoy this work. It is one of the most comprehensive books on flowers and flower-garden matters ever issued; and must do much to place open-air gardening on that high plane which the lovers of the beautiful art so fondly desire to see. It occupies over 1,300 pages, and there are few that have not colored plates or wood engravings illustrating the text; being arranged in dictionary fashion, any plant or flower on which information is desired is readily found. They are not only described, but their value in gardening is estimated. Plans for gardens and flower beds are included, and lists of plants out of which beautiful combinations can be made. One can scarcely suggest a topic that has not received attention. Even the technical terms used in gardening and garden botany, aud the full names of the authors responsible for plant names, are included. We may congratulate the author and publishers on producing the greatest floral work of the century.

Luther Burbank.—Mr. Luther Burbank, of Santa Rosa, Cal., is well known by reason of the great success which has attended his efforts to improve fruits and flowers. He is one of those in whom a taste for horticulture was developed at an early age. The famous Burbank Potato was raised by him, from seed, when he was but sixteen years of age. He became a resident of California twenty years ago, starting at first in the general nursery business. His love for new productions, however, was so intense that he finally gave up the business, spending his whole time in hybridizing and raising, by selection, new fruits and flowers. In this he is doing admirable work, and it is a satisfaction to know that his successful labors are having popular support. As a raiser of popular new plums he has been particularly successful. Two of these, called the Giant and the Wickson, are regarded as among the best of the plum family.

The Southern Florist and Gardener.—The first number of the *Southern Florist and Gardener* gave evidence of filling a useful field. It has now gone through six issues, and fully bears out its promise. It brings more original and useful matter regarding Southern gardening than any periodical that comes to our table. It is published by Geo. M. Brandt, Chattanooga, Tenn., monthly, at $1.00 a year.

Professor Selby, to whose good work as Secretary of the Columbus Horticultural Society *Meehans' Monthly* has had occasion to compliment, has now been appointed botanist to the Ohio Experiment Station, at Wooster. Good work in this quarter may be looked for.

GENERAL NOTES.

RAMIE. — Some years ago there was great hope of bringing this into successful culture in the Southern States. There is no question about the strength and beauty of the material that can be manufactured from it. It is almost a rival of silk in this respect. The conductors have seen some admirable productions made from it. The chief difficulty has been in the manufacture of machinery to prepare the fibre cheaply. This ought not to be an insuperable difficulty. If the matter were taken up in earnest, by some state authorities or association, improved machinery would no doubt soon be forthcoming. It is said that the authorities of Jamaica are entering into ramie culture, with some enthusiasm ; but as before noted, it is not so much the culture as the cost of preparing the article which has been the trouble.

THE ROSEMARY AT FUNERALS.—It was the custom in the rural parts of England, and probably is yet to a great extent, for every attendant at a funeral, to carry a sprig of rosemary, which is thrown in the grave when the last look is taken. Mrs. Seliger states that this custom is also followed in Germany, and that the rosemary is grown as a pot plant in many windows, and thus furnishes many a sprig for the mournful occasions. It is believed that the custom originated in a belief that Rosemary had the power of aiding the departing soul in its struggle against evil spirits.

YUCCA FILAMENTOSA.—This beautiful ornament of northern gardens seems deserving of far more attention than it receives, as a valuable fibre plant. In glancing over an account before us of the disasters and troubles of a southern traveler, he refers to his trace chains having broken without anything at hand to serve the purpose of the link for his heavily loaded wagons ; but the leaves of the yucca were gathered and hammered soft on the wagon tire, so as to separate the pulp from the fibre, and that with this fibre the missing link was supplied,—and so great was its strength, that it served its purpose perfectly during the whole of the long and wearisome journey.

ENGLISH AND AMERICAN ROSES.—The great difference in taste, between English and American people, is in no way better illustrated than in the popularity of various florist's flowers. In the rose, for instance, the long, oval shaped, is the popular form,—a roundish rose bud would scarcely have sale in America. On the other hand, the large globular, or even somewhat flattened kinds, are popular in England, and what is true of the rose is true of almost all other flowers that are in use by florists. In carnations, for instance, the heavy, coarse variety known as Souvenir de la Malmaison, is the popular variety in England.

COPPERAS.—It is generally understood that when the word "Copperas" is used as relating to a fungicide, "sulphate of copper" is meant. In common language, this is known as blue vitriol. A correspondent suggests, however, that as so many persons know copperas simply as "sulphate of iron," it is better to use the word "blue vitriol" always, when sulphate of copper is referred to. It is just possible that some of the differences reported in results arise from the fact that copperas or "sulphate of iron" is used instead of blue vitriol or sulphate of copper.

A LANTANA AS A WEED. — It is said that the planters of the Hawaian Islands, are troubled as badly by an introduced species of *Lantana*, as western farmers are by the Russian Thistle. The particular species is not given. Birds eat the berries, and thus scatter the seeds.

PROFITS OF TREE PLANTING.—One wants to know whether it would be more profitable to give up growing regular farm crops, and grow young trees. One might as well ask whether he had better turn his barn into a cotton mill. It depends on his knowledge of the business.

OXALIS VIOLACEA.

VIOLET WOOD-SORREL.

NATURAL ORDER, GERANIACEÆ.

OXALIS VIOLACEA, Linnaeus.—Perennial bulb-scales stemless. Leaves radical, trifoliolate; leaflets about half an inch long, and wider than long; common petiole two to six inches long. Scapes four to six or nine inches high, naked, sub-umbellate, two or three to six or nine-flowered. Flowers violet-purple, nodding. Sepals callous at the apex. (Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*, Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.)

In taking up this very pretty wild flower we may be reminded that beauty is but a matter of taste, and that what is regarded as beautiful in one generation or in one part of the world, would not be so regarded in other times or places. But this is not strictly so. There is a science in beauty, and one who has studied this science not only admires that which may excite his affections, but is able to give very good reasons why he does so, and to which all may assent. In the violet wood-sorrel we have a plant which every one will pronounce beautiful, and in every line and feature the critical student will find all that he could desire as a model in its special type.

The whole Oxalis family is a particularly beautiful one. There are nearly two hundred species of the genus in different parts of the world, Africa especially having numbers of them, and there is scarcely one that has not some interesting feature. The colors of some of them are very brilliant, and among these colors are white, red, yellow, crimson, violet, and frequently several colors in one flower.

The common species of Europe, and which is also found on this continent, has made a mark in history. It is said that St. Patrick, failing to convey the idea of the doctrine of the Trinity to a powerful Irish ruler, was able to explain it by using the leaf of the wood-sorrel, the three leaflets on one stalk affording him the illustration. The plant is the real Shamrock, though in modern times the clover answers the purpose as well. Its very early flowering has also caused it to be associated with Easter, the coming of the cuckoo, and other evidences of the advent of spring. An anonymous French writer, referring to these associations says: "It is vulgarly called Cuckoo-bread because it appears about Easter. Every evening this pretty plant shuts its leaves, closes its corollas, and hangs its flowers; it seems too wild to sleep, but, at the first approach of day, unfolds its petals, and opens its flowers. It is probably for this reason that the country people say it gives praise to God, and has been held in the Language of Flowers to be emblematical of joy." The European species has pale whitish flowers streaked with light purple, and, in common with many other species, draws back the scape after flowering is over, as if it would actually place the seeds in the ground. Referring to this pretty incident in the plant's life, the poet Lisborne describes the plant as one that hangs her cups,—

"Ere their frail form and streaky veins
O'er her pale verdure, till parental care decay,
Inclines the shortening stems, and to the shade
Of closing leaves her infant race withdraws."

Our Violet Wood-Sorrel has all these interesting features. The flowers and leaves close at night, and what is very remarkable the leaves close—that is droop just as freely under very bright light, as at the approach of darkness. Mr. Nuttall notes that the leaves are "sensitive, as in Mimosa," but the writer has not been able to confirm this except in relation to light as already noted. In earliness of flowering it also shares with the Wood-sorrel of Europe. In Marcy's exploration of the Red River country it is stated that it was found there in April, and Pursh notes in his Diary of Travels through the Northern States that it was in flower on the 28th of May in the elevated regions of the Bushkill Creek. Our specimen was gathered along the Wissahickon near Philadelphia, not more than fifty feet above tide water, and there it is among the

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INTENTIONAL SECOND EXPOSURE

earliest spring flowers, blooming with the *Houstonia coerulea*, Spring Beauty, and other more familiar things. It has the peculiarity, however, of flowering at different periods of the season, and our specimen was taken about mid-summer, and Mr. Nuttall notes that it will sometimes flower in autumn, after all its leaves have died away.

The common species of Europe, *Oxalis Acetosella*, and which, as already noted, is found in our country in northern regions, and on the more elevated pastures of our high mountains, has contributed its share to an interesting branch of modern botanical study, the fertilization of flowers. It not only has petal-bearing flowers, but others which never open, but yet perfect seed while the floral organs are yet in the bud. These are known as cleistogamic flowers—that is to say flowers having secret marriages. The petal-bearing flowers were at one time supposed to be introduced in such cases in order to afford the plant a chance for cross-fertilization by attracting insects which it was thought brought the pollen from flowers on other plants. But it has since been discovered that where plants have these double methods of flowering the petal-bearing flowers are usually barren. The plant seems to depend chiefly on the cleistogamic flowers for seed reproduction. This later discovery opens up again the whole question of the object and uses of color in flowers; and it gives those plants which have this double character an especial interest to the students of plant life. Though this character has not been noted in *Oxalis violacea*, it may reasonably be looked for, and the search for them will give it additional interest to the plant collector. It is a fact that large numbers of the flowers are infertile, and this has some hidden meaning.

In its geographical relations it is interesting from its very wide distribution. It is found in almost every state on the Atlantic side of the United States from Canada to Florida, extending west on our northern boundary to Minnesota, and is sparingly found in the Rocky Mountains. Dr. Rothrock found it on Mount Graham, in Arizona, at the height of 9,250 feet above the level of the sea.

The genus has long been famous in history. Pliny, the old Roman writer on natural history, refers to the European species as *Oxys*, and to its value as medicine. The leaves have a pleasant, acid taste, and this accounts for Pliny's name which means simply sharp. In the middle ages plants were grouped more from the appearance of the leaves than from the structure of their flowers, and hence we find Bauhin and others about that time classing it with *Trifolium*, by which we should now understand the clover family. But even in those days we see that they had a glimpse of the binomial or two-name system which was finally adopted by Linnaeus, for Bauhin divides his Trifolium into sections such as *Trifolium pratense*, *Trifolium spicatum*, and many others including *Trifolium acetosum*, for those, like Oxalis, with sour leaves. Oxalis was the name given to the common Field-Sorrel, now *Rumex acetosa*. When plants became better understood this name was given to the genus it now bears as we find in Tournefort, and afterwards adopted by Linnaeus. It was a very appropriate transfer as more in association with the original name of the great Roman writer. Oxalic acid of commerce is not however wholly obtained from these plants as one might infer from the name, but from the "original Oxalis," the Sorrel. Large quantities of Sorrel are used in Switzerland for the manufacture of this article. Binoxalate of potash is manufactured in Switzerland from the Wood-Sorrel. Griffith says that our Violet Wood-Sorrel possesses and contains this salt as well as the European species. Oxalic acid is a deadly poison, but as distributed through Rhubarb, Sorrel and the Oxalis, does not appear to be injurious when cooked, or even in its raw state in moderate quantities. Some of the species produce roots large enough to be worth cooking.

In former times American botanists made of these plants a distinct natural order,—*Oxalidaceæ*. Of these Dr. Lindley, though still retaining the distinction, remarked, "These plants were formerly included in the order of Cranes' bills (*Geraniaceæ*,) from which they are in the opinion of many, not sufficiently distinct." In more recent times American botanists have abandoned attempts to keep them distinct, and they are now classed with Geraniums. Though affording no characters which botanists consider sufficient to found an order on, they have a peculiar appearance which distinguishes them.

WILD FLOWERS AND NATURE.

THE MERRIMAC RIVER.

Sing soft, sing low, our woodland river,
Under thy banks of laurel bloom;
Softly and sweet as the hour beseemeth,
Sing us the songs of peace and home.

Bring us the airs of hills and forests,
The sweet aroma of birch and pine;
Give us a waft of the north wind laden
With sweetbrier odors and breath of kine.

Sing on! bring down, O lowland river,
The joy of the hills to the waiting sea;
The wealth of the vales, the pomp of the mountains,
The breath of the woodlands bear with thee.

—WHITTIER.

THE SEVENTEEN YEAR LOCUST.—Those who love to watch the operations of nature will find much interest in observing how the locust leaves the case in which it has lived for seventeen years in the earth. One who watched them thus tells his story:

"Naturalists say they come out only in the night. For almost two weeks I watched them nightly, and they made their appearance an hour before sundown, increasing in numbers until dark. Crawling by thousands through the grass and over the bare ground in their brown casing, which they are about to throw off, they are often covered with mud. Ascending weeds, posts, fences and frame work in droves, and particularly trees, they fix themselves to the bark and on the leaves. At this time they encounter many enemies, as chickens, hogs, squirrels and birds are very fond of them. Our cat was seen every evening watching in the grass, seeming to relish them as a dainty.

One evening I secured seven on one branch, and witnessed the operation of their new birth by lamp light. They were some time running up and down selecting a position. Once fairly fixed the back part of the head soon becomes smooth and glossy, as if stretched to its utmost tension. In five minutes from the time of settling in position a longitudinal fissure, showing a threadlike white line where the split occurs, on the back of the head first, extending finally from the first joint, connecting the proboscis or forceps to the body joint, half an inch in length. In three minutes more the head had pressed its way out. Gradually the forelegs were withdrawn from their sockets,—say in one minute. Then the whole body swung slowly backward, head down and feet outward, suspended with an occasional tremor, as if trying to extricate the hind part and legs. When it had hung for three minutes it then very slowly, like an acrobat, brought its body up to the original position, withdrew the hind legs and body, and in two minutes more stood outside the pupa skin in full form, an inch long, of a white, waxy appearance, with red eyes like rubies. The wings showed only as a mass of cramped up white film. In a minute the wings had grown to three-quarters of an inch, by measurement; in three minutes to one inch, and in six and a half minutes to the full size of one and a quarter inches in length and half an inch in breadth. In twenty-two minutes the whole process was accomplished."

The yearly "locust," would be as well worth watching.

MERTENSIA VIRGINICA.—Mrs. Octavia R. Polk, Hickory Valley, Tennessee, says:—"Will you please tell me if the sample I send is a kitchen *salad*? Has it been used as such? It grows wild here in Tennessee. We call it 'cowslip,' which seems to be the proper name."

It was a very beautiful specimen of *Mertensia Virginica*. Does any reader of MEEHANS' MONTHLY know whether it has been used as suggested?

MORPHOLOGY OF LEAVES AND FLOWERS.—A correspondent sends a flower of *Clematis coccinea*, in which the sepals, or outer cup of the flower has developed large, heart-shaped, green leaves at the apex of each sepal. It gives the flowers a very unique appearance. Still it is not unusual among flowers, and can be frequently seen on the sepals of the rose. In this case the crimson color of the sepals makes the green termination more striking.

A TWIN ASPARAGUS.—The readers of MEEHANS' MONTHLY have often been told that vegetable freaks convey lessons in plant-life that could be taught in no other way. Here is a twin asparagus shoot. When we look at a cucumber, we can scarcely believe that nature formed it out of three leaves, which, however, were never permitted to develop to perfect leaves,—or that an orange is made up of ten. It is difficult for the student to understand that one set of three leaves can be made to do duty for a number of others which have become so consolidated that one can scarcely suspect their original individuality. But in this asparagus freak, this truth can be clearly perceived. The leaves, or scales, individually, are attached to both stems. It follows as a logical necessity that these leaves were originally distinct from the stems, and that they became united to both in some very early period of their life-career,—so early, in fact, that no microscopist, so far as known, has been able to detect the beginning of the operation. But we can see from the results what the beginning must have been.

THE STORY THE WILLOW TREES TOLD.—In a pretty description of a winter stroll in the woods near Philadelphia, written for the *Public Ledger*, Dr. C. C. Abbott describes a group of aged willows and interprets for us the story the willows told.

"When I stood in the weedy hollow between the five huge trunks, the spot was still as the sleepy church yard with its charge. For the first time, though often here before, I noticed how strangely shaped were the trunks of the two willows, and closer investigation showed that they had overgrown a stile until at last they had quite concealed it. The wood of the two old willows was now so rotten that the last efforts of a racoon or opossum to effect a lodgment had broken away large pieces of the trees, and so exposed the stile. A path then had passed between these trees, and I could see the probable direction it extended; but why a path here, and from what point did it start and whereto did it lead? These were hopeless questions. I doubt if anyone now living knows; but what of the people who had passed to and fro in years long gone? Here, indeed, must have been a favorite spot for people to meet—by accident, of course—and we know that young Friends were equal to falling in love, and have been known to flirt. I have read of one ancestor who was reproved for levity, and married out of meeting as a consequence. In a quiet way, this was a lively neighborhood, and the one-time foot-path and stile in a little grove could tell a pretty story if they would but speak."

THE INDIAN SHOT OR CANNA.—It has been stated that the only difference between a weed and a wild flower is, that it is a weed when it comes up where the cultivator doesn't want it. A wild flower, then, becomes a weed when growing in cultivated ground. One would hardly suppose that the Canna of our gardens, a beautiful wild flower of Florida, is often a great pest to the Florida horticulturist, and is classed there as among the worst weeds. It seems it appears persistently in low ground, known to cultivators as hummock soil; its root stocks grow so deep in the ground, that the plow does not turn them out, so that they grow up as bad as ever in newly plowed ground. The roots have to be dug out with a spade, in order to get clear of them.

OSMUNDA REGALIS.—Mr. Thomas Roberts, at Green Cove Springs, Florida, writes:—

"With this I mail you tips of fronds of one of the most graceful of the larger ferns of this section. Ordinarily, the fronds run from 3 to 4½ feet in length and from 1 to 2½ feet in breadth. The best specimens are fonnd in wet swamps. I have also met with it in sunny locations."

The fern is evidently the Royal Fern, *Osmunda regalis*, but much more slender and graceful than when growing in more northern localities.

NOTE ON SOLEA CONCOLOR.—On this curious, half-shrubby violet, Mr. E. N. Williams says:—

"I have found some rare and beautiful plants among the abrupt hills of Delaware County, one no less remarkable than the green violet (*Solea concolor*). I found the flower in late May, and the pods and ripening seeds later in the season. There it stood, an acre of it, on a rich wooded hillside, each plant more than two feet high, the long, spreading leaves bearing little green, peduncled flowers in their axils at intervals up the stem. On close inspection, the flower exhibited the saccate spur; the slender, pointed sepals and large stamens characteristic of its order, and the oblong, wooly pod enclosing the shiny, brown seeds, seemed just like a larger edition of the downy yellow violet."

EASILY CULTIVATED ORCHIDS.—SEE PAGE 130.

ADAPTATION IN ANIMALS.—The ease with which creatures can adapt themselves to new conditions is in no way shown to better advantage than in the case of the chimney swallow. It could not build in chimneys until the white man in America made the chimneys in which they could build these nests. In these chimneys the nests are built of small twigs neatly glued together with vegetable gum. This gum is obtained for the nests built near Philadelphia, from the garden cherry, peach or plum. In many places the gum could be obtained from native gum-yielding species, but it is probable the bird must have at one time built its nests outside of the gum producing region, when its nests would have had to be differently constructed. Audubon concluded that the gum used was of animal origin, secreted by the bird itself,—but this belief is now known to be erroneous.

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INTENTIONAL SECOND EXPOSURE

THE ORIGIN OF SPECIES.—Modern students of nature have concluded that species have come into existence from other species, by change, through gradual modification, over a long series of years. The writer of this produced a number of instances. and worked them into a paper entitled "Change by gradual modification not the universal law," which the American Association for the Advancement of Science, over a quarter of a century ago, did him the honor to publish entire in its proceedings. Though there is a gradual modification in some cases, as in the change of leaves to bracts, and bracts to involucre or calyx-leaves, the greatest

changes occur suddenly. In these cases, the botanical canon *natura non facit saltum* is not true, she sometimes hobbles along on crutches; but her best work is done on the leap.

To-day we give an illustration of a corn plant, which grew among hundreds of others, which branches from near the ground, and bore as fine large ears as any ordinary corn plant would do. The central stem goes on and makes the usual tall stalk, with its male flowers or tassel. Nowhere in the field was there any gradual modification leading to this result. There were some with ears on shorter stalks, others a little longer and lower on the stem,—and others longer and lower than these. It is a wide and sudden leap, with no gradations.

The explanation is simply this. There is no condition of environment—no external circumstance at work to influence the change. Environment operated on scores of grains of corn in the same ear as on the one which produced this plant,—and in a similar manner on all the plants in the field. The plants' own internal energy effected the change. The force usually directed upwardly along the main stem, and diverted usually when near the end of its growth, was diverted earlier in the life-stage. This acceleration was undoubtedly dependent on nutrition,—just how is not clear, but there is enough open to us to see in what direction to search.

THE DUCKWEEDS.—The curious plants that often cover pools and stagnant water with a living sheet of scum-like green, known to botanists as *Lemna*, and commonly termed Duckweeds, are little understood so far as their morphology, habits and general character are concerned. Judging by morphological characters, they ought to be nearer the arum family,—*Araceæ*—than any other. Mr. Tillinghast finds that "there seems to be not less than *three* modes of reproduction in these plants, viz., 1. By a process of budding or 'germination,' 2. By 'minute bulblets' which sink to the bottom of the water in autumn, but rise and 'vegetate' in spring, and 3. By flowers, in summer."

GREEN LEAVES INSIDE AN ORANGE.—Sometime since MEEHANS' MONTHLY had before it an orange in which the seeds had germinated. An interesting physiological question arose,—how did these young roots, cut off from the earth, know how to send their roots downwards,—and how did the leaves become green in total darkness? About the last point a correspondent suggested that there might be light enough through the rind of the orange. This the conductor could not verify. Miss Pinckney now says:—"Do you remember about the orange with a green sprout within? Well, I tried the peel of two which had lost all juice, and were only pulpy, and the shadow thrown by them was not quite yellow.

GENERAL GARDENING.

FLOWERS ON RUINS.

Sweets of the wild: that breathe and bloom,
On this lone tower, this ivied wall;
Lend to the gale a rich perfume,
And grace the ruin in its fall;
Though doom'd, remote from careless eye,
To smile, to flourish, and to die,
In solitude sublime;
Oh! ever may the spring renew
Your balmy scent and glowing hue,
To deck the robe of time.

—MRS. HEMANS.

PLANTING OR SOWING LAWNS.—"Plant Blue Grass!" That was a brave saying in *The Monthly* for May. But is it not about time to remind the public of the wealth of grasses under their noses? Of the blankets of provisions let down to Peter? Of the "Little Trooper" Festuca you can sell pure stock of? (It covers 20 or 30 x 7 feet in this Turf-garden, which is not in trade, and there may be 20 or 50 "Sheep's Fescues" in it, all different and just as good!)

When you say "Plant Blue Grass"—why not, for variety, tell the people to select a *good* blue grass?

We show fifty—perhaps a hundred—sorts this spring, selected over half the world, and "variety *is* the spice of life."

Then, how could the *Monthly*, while the lawn-ground was all bare and feasible, fail to put in a word of caution about weeds? And say, beside, how fine the surface of it might be made, as regards smoothness and settlements, if the whole business is sprinkled, hoed and rolled and kept fallow till towards the last of August, while the ladies of the family were selecting a grass just suited to their complexions!

You know how much easier and cheaper it is to clean your land *before* you plant or sow it than afterwards to be thumb and fingering forever, and never getting the ground clean, on your hands and knees. J. B. O.

P. S.—About a thousand turves, from all over, are going into the ground here this spring. There were forty-three cases on forty different steamers, without the loss of ten sods, because the New York Custom House let them alone. (Thanks to the Treasury Department and Secretary Morton.)

An enemy of mine has an electric railway, to be running next week within three minutes of us. Scribner writes that he is coming to see the grasses "early" this season, but the time for earliness is past already. There are, however, more lessons in turf-culture anyday in the year than anybody can hold.

J. B. OLCOTT.

The Ranche, South Manchester, Conn

Mr. Olcott is right. Wherever it can be done conveniently the best and most satisfactory lawn can be had by planting one variety, instead of sowing the seeds of the species, however good that species may be. But there are some who are satisfied with that which is good, or are not in a condition to get the best, and seeding seems all that is left to these people.

GROWING AQUATICS.—Once upon a time the writer of this paragraph was invited to a nursery celebrated for its large business in connection with the growing of water plants, or, as they are commonly called, aquatics. As the locality was far away from lakes or ponds, much curiosity was felt as to how the large quantity of plants was cared for. It was found that nearly everything was being raised in old kegs or barrels, sunk deep into the earth, and where water could be led into them by a hose or other methods. The hint may be taken advantage of by those who read of the beauty of aquatics, but do not have lakes or ponds of their own to grow them in. Old paint kegs, or any vessels that will hold water, can be buried partly in the earth, filled with water, and seeds sown, or young plants planted in mud placed at the bottom of the water. Many of the smaller kinds of water plants can be grown in this way without any serious difficulty. The vessels need not be water-tight.

THE SEXES OF STRAWBERRIES.—In looking over my garden to see the effects of last night's frost (which did very little damage so far as I could see), I was attracted to a small patch of strawberry plants, a seedling that I have fruited for several years, and always regarded it as a strong staminate variety; and noticing some pistillate flowers, I suspected some spurious plants being amongst them; but upon close examination I was surprised to find both S. and P. flowers on the same plants, usually, however, on separate branches or trusses. A few of them show the pistillate flowers along with those that have a full complement of stamens.

I take the liberty to inclose a few of the flowers for your examination. This may not be a new freak, though I don't remember ever seeing it. B. L. RYDER,

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This reminds one of the controversy of forty years ago, of which the agricultural and horticultural journals of that time were full. In the specimens sent by Mr. Ryder, some of the pistillate flowers had a single perfect stamen, others two, three or more, others almost the normal number for an hermaphrodite. The late Mr. Nicholas Longworth, Wm. R. Prince, Dr. William D. Brincklé and many leading authorities contended that such a "change of sex" as they termed it, was impossible; and when the change was proved, as in Mr. Ryder's case, to actually occur, that it was "normal to that variety and none other." Like many other controversies, there was some truth on all sides. Some varieties may be of such a strong staminate or pistillate character, that a disposition to abort or reproduce aborted stamens would be rare; while other varieties, on the border line would easily vary the characteristics. Mr. Ryder's observation indicates that the one variety referred to modified its character more readily than other varieties under his notice.

It is really the case with all kinds of plants and trees. Individual trees are often more fertile than others, and others more sterile; yet some will vary in there sexual characteristics, under varying conditions, while others will not. Some fruit trees will blossom freely when young, but on account of weakness in stamens or pistils, will have few fruit. But with age the tree bears abundantly. Other varieties will bear well whether young or old.

PUBLIC PLAY GROUNDS.—Mr. B. Frank Leeds, Hackettstown, N. J., says: "In your June number (MEEHANS' MONTHLY), after quoting from Mr. Doogue, the Boston gardener, about the damage done to the public parks of Boston by trespassers, you make a remark exactly to the point when you say of all such public grounds that *their use as playgrounds should never be lost sight of.*

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Another beautiful spot, "Vernon Square," has trees and grass, but being "unimproved" there is no restriction, and a local paper had recently to rejoice that it was so, because "the green grass stains on the children's clothing" showed how the youngsters had enjoyed themselves. It is pleasant to note that Philadelphia's Chief of city property, Eisenhower, is fully alive to this desirable reform, and though he has no expert aid from the city in laying out and caring for city trees and squares, the children will be cared for in what may be done in the arrangements of the new places. A recent ordinance allows children under 12 years to play on the grass in the summer months.

A STUDY OF BEGONIAS.—Mr. John Coulson, gardener to Hon. Stephen Salisbury, is a lover of Begonias, and has made the ultimate forms a special study. He has a rare collection of photographs, blue prints, and drawings of the numerous species and varieties; and has prepared accounts of their characters and histories. The species hybridize so easily and florists' varieties are therefore so numerous that the most wide-awake horticulturist or botanist is uncertain as to their nomenclature. The love of the Begonia, and the desire to know more of them, is widely diffused, and it might be worth while for Mr. Coulson to publish an illustrated work some time. It certainly would be a treasure to Begonia lovers, if not very profitable to the author.

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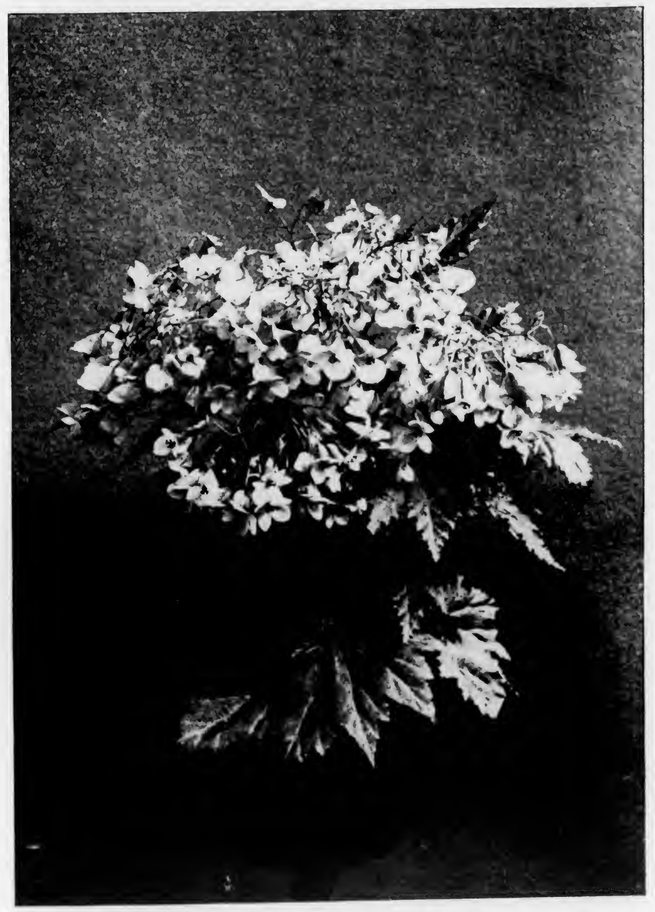

PAUL BRUANT BEGONIA

INTENTIONAL SECOND EXPOSURE

We give a cut on the preceding page of a very pretty but little known hybrid, "Paul Bruant," showing how beautiful the illustrations are. Begonias usually vary much in fertility. Some forms have a great preponderance of male, others of female flowers. The female flowers are more desirable, as remaining longest without withering than the males. In this illustration the female flowers can be readity distinguished by the thickened immature seed vessels under the corolla.

A FEW CULTURAL NOTES ON SOME EASILY CULTIVATED ORCHIDS.—Orchids are considered the *élite* of flowering plants, and justly so. The curious and varied forms of the flowers, the richness and variety of the colors, embracing almost every shade, their exquisite and aromatic fragrance, their peculiar habits and manner of growth, all combine to make them objects of interest to the thoughtful and to the lover of nature. Even the most superficial observer is stricken with wonder as well as admiration on first beholding these beautiful plants in bloom. Orchid culture improves our taste equally as much as a study of statuary or paintings, for what art is superior to nature? The close observation of the habits of the plants cultivates in us the faculties of attention and reflection. So that orchid culture is not an idle fad, but has effects truly educational.

The following brief notes are not intended for the professional gardener or trained orchid culturist, but they may be of some help to those beginning the culture of this class of plants. They are the personal experience of the writer, extending over a number of years.

The indispensable conditions for orchid culture are: Suitable temperature, a pure buoyant atmosphere, proper potting and careful watering; attention to the periods of rest and growth; and, for the majority of the species, shade from the direct rays of the sun in this latitude, together with freedom from insect pests, and general cleanliness.

He who can command these conditions, and faithfully attend to them, can become an orchid culturist. The orchids here described require a minimum temperature of 55° at night, except in very cold weather. As the sun increases in power the temperature may be raised gradually to the normal summer temperature. The rule is, with the increase of light and the approach of the growing season, which for most species happens at the same time, increase the temperature. But in dull weather do not force the thermometer up by means of fire heat. The atmosphere of the orchid house must always be pure and buoyant, or as the gardeners say "live," never stagnant nor foul. In dull, wet weather in summer, if long continued, a fire must be lighted and plenty of ventilation given to start the air of the house in motion—this is a *very* important point. Never admit cold draughts, but change the air of the house every day by giving ventilation on the inside. *Potting*.—Proper potting is more important in orchid culture, than in that of any other class of plants; it is the foundation of success. The proper material for potting is, for the majority of the species, a compost consisting of two-thirds peat fibre and one-third of clean, live sphagnum moss. Shake out the earthy matter from the peat fibre till it feels to the touch like horse hair, then mix in the sphagnum. For Vandas, Phalænopses, etc., living sphagnum and broken bricks, with a few nodules of charcoal, are the best materials for a compost.

The pots must be two-thirds filled with broken pot-sherds for drainage. If baskets are used they must not be too large, and very shallow, about two inches deep. Place a layer of pot-sherds in the bottom of the basket. Do not have too great a bulk of potting material in pot or basket, as it is more liable to become sour. The correct principle in potting orchids is, that the compost should hold water by absorption only, like a sponge, and must pass freely through it. Pot firmly, as a firmly packed compost holds less water than a loose one. When the plants are at rest they require very little water—some none at all, such as are deciduous—just enough to keep the pseudobulbs from shrivelling, but the atmosphere must always be moist. As soon as the plants show signs of growth they must receive more water. At the period of their greatest activity they should receive their maximum amount of water, atmospheric moisture and heat. When they have finished their growths they must be gradually ripened by witholding water, and allowing more air, and keeping the house cooler and dryer. Orchids require shade from the direct rays of the sun from the first of March to the first of October, but a little all along will do them no harm, only do not have it too dense in winter. A painting of naptha and white lead put on in spring will have been sufficiently washed off against winter time, by the rains, as to be harmless during the dull months. They should be sponged frequently with soft water and a little carbolic soap, four times a year, at least, to keep them free from scale and aphis.

In winter time, when the fires are going, keep fresh tobacco stems on the pipes. The fumes kill thrips and ahpis. In summer time fumigate once a month, by burning tobacco stems. Do not fumigate too strongly. Slate benches are the best, as they do not harbor woodlice, slugs and other pests. These pests must be dilligently sought after, by night, with candle, if necessary. Keep everything around and about the plants scrupulously clean.

List of Varieties.—*Cypripedium insigne* is one of the longest known and most easily cultivated orchids. It is a winter bloomer, and lasts six weeks in perfection. Pot it, and all the Cypripedes, in a compost of half peat fibre and sphagnum moss. *Cypripedium Rozli*, *C. Sedeni* and *C. Lawrenceana* are also of easy culture. *Vanda cærulea*—flowers pale blue and borne in graceful racemes, *Cattleya Trianæ*—a beautiful winter bloomer with a large number of varieties, none of which are poor; blooms from December to February and March, and lasts long in perfection. *Cattleya Percivaliana C. Skinneri*, *C. Mossiæ*, *C. Bowringiana*, *C. Mendelli*, *C. labiata* and *Gaskelliana* can all be recommended. *Cœlogyne cristata*—lovely pure flowers with yellow crested lips; valuable for wreaths. *Dendrobiums nobile*, *chrysotoxum* and *thyrsiflorum*. *Lælia purpurata*, sometimes designated the "king of orchids," with large white flowers and crimson-purple lips, blooms in early summer. *Lælia anceps* is a fine winter bloomer. *Phajus grandifolius*—free-flowering terrestrial species, blooms in March and April. Pot in two-thirds peat fibre and one third sphagnum, after it has done flowering. *Sobralia macrantha*, a reed-like species with cattleya-like flowers. *Oncidium crispum* and *O sphacelatum*—basket culture. *Burlingtonia fragrans*, suspend from the roof in a shallow basket. The following are also worthy of culture: *Brassavola glauca*, *Cymbidium Lowianum*, *Epidendrum ciliare* and *E. raniferum*, *Lycaste aromatica*, *L. Lawrenceana* and *L. Skinneri*, *Odontoglossum pendulum* and *Maxillaria tenuifolia*.

The beginner may safely enter into the culture of any or all of this list; they are all cheap. And the amateur will find more pleasure in caring for a half-dozen plants of each kind than in a solitary specimen, as sometimes a plant fails in the most skillful hands.

WM. FITSWILLIAM.

Baronald, Orange, N. J.

Some time since the *Gardener's Chronicle* gave an illustration of a *Dendrobium densiflorum*, as grown by an English culturist, Mr. Prinsep, a species closely related to those named in the excellent paper of Mr. Fitzwilliam, and which is introduced here (see page 125) to show what lovely objects result from practice such as Mr. Fitzwilliam describes. In the species figured, the orange and yellow flowers, with the tongue-like green leaves distributed through them; make a living picture difficult to excel in beauty.

Orchids are always interesting, but when well grown, few flowers will compare with them in any point of view from which a flower may be regarded.

CYPRIPEDIUM INSIGNE, AND OTHERS.—G. A. H., Providence, R. I., notes: "I had understood *Cypripedium insigne* to be an East Indian orchid instead of Mexican as stated in the March number of the *Monthly*. B. S. Williams gives its habitat as north-eastern India. My flowers last much longer than the time you intimate, rarely fading short of fourteen weeks. *C. villosum* does nearly as well, in fact, one flower of the latter lasted sixteen weeks with me this season; but this never happened before. I should say twelve was about the limit. Messrs. Pitcher and Manda tell me that *C. insigne* will give more flowers if gradually exposed to full sun in summer. I shall try the experiment this season, but think it will be very necessary to see that the plant does not lack for water."

It was a slip to quote *Cypripedium insigne* as a Mexican species, it being East Indian as stated. Mr. H. has the conductors' best thanks for the correction and additional points of interest. The species is largely grown for cut-flower purposes,—and its durability favors its use.

ANDROMEDA FLORIBUNDA. — The natural order *Ericaceæ* gives us some of the handsomest and most interesting ornaments of our gardens. We find here the rhododendron and kalmia, the trailing arbutus, the manzanita of the Pacific slope, the gaultheria or teaberry of the East, the azalea, clethra and others, among which, certainly not the least in value, is the large genus which in nurseries generally goes under the name of *Andromeda*. The greater part of these are natives of upland regions, and are among the earliest of our flowering

ANDROMEDA FLORIBUNDA.

shrubs, some opening in March, if circumstances favor. The species now specially noted, *Andromeda floribunda*, will often be beautifully in flower by March when favorably situated, though in its native location, the Southern Alleghenies, it is seldom seen with its beautiful white waxen globes open before April. It thrives anywhere in our gardens where the soil is not stiff. It must have an open, porous soil, even though it be made porous by broken stone only. It is not then particular about the rest of the soil composition.

The general name, *Andromeda*, is here given because this is the name employed in Horticultural literature. The critical botanist would probably insist that it should be *Pieris floribunda*. But there is no such thing as a genus in nature, and the determination of the limit of a genus is simply the opinion of an expert, which other less informed botanists agree to adopt. In the case of *Andromeda*, even the experts do not agree. Some think there should be several score of *Andromeda*,—others divide them into half a dozen genera,—while still others retain the names others would have for the genera, to indicate generic sections merely. It has been thought best for the present to follow the nursery literature.

THE WILLOW OF BABYLON.—A correspondent from Newport, Vermont, says :—

"I notice in your last issue the statement that the wood of the Weeping Willow is "as brittle as glass." Allow me to say that the Russian form (a slip of which I enclose) is on the contrary very tough indeed ; small limbs like that enclosed being as unbreakable as hemp twine of the same size."

The note shows how careful one should be in the use of terms. "Weeping Willow," as used in the article on the Willow of Babylon, may mean many different things. But the "Willow of Babylon," and "Pope's Weeping Willow" are intended to mean the *Salix Babylonica* of botanists. This is pre-eminently known as the *Weeping Willow*,—and when not qualified by some other term, is the one usually referred to. If a nursery correspondent wrote for a Weeping Willow merely, this one would be sent. Otherwise he would say Kilmarnock Weeping Willow, or some other Weeping Willow. The specimen sent is the purple willow, *Salix purpurea*,—and is not even a weeping willow naturally ; but has a somewhat pendulous habit when grafted on a tall stem. It is, as our correspondent says, so tough, that nurserymen use it for tying, and it is in extensive use in some parts of the world for the finer classes of basket work.

HARDY EVERGREENS IN ILLINOIS.—Mr. E. H. Smith finds that at Peoria, Illinois, with a very severe winter, the thermometer going to 25° below zero, *Retinospora obtusa* and *Retinospora filifera* were wholly uninjured.

FORSYTHIA SUSPENSA AS A CLIMBER.—A year or two ago I wrote you that I was training up a plant of *Forsythia Fortunei* as a climber, and I now want to tell you of my perfect success. It has been planted three years and has reached the top of the trellis, ten feet high. I have allowed only a single stem to grow, but that is full of spurs and sprays of a foot or so long, and it is now and has been for a week, a perfect blaze of beauty. *F. viridissima*, after a trial of more than twenty years, I have had to discard, for although the plant itself is perfectly hardy yet the flower buds almost invariably get winter killed. *F. Fortunei*, however, seems to be more hardy as to the blossom buds, and the past two winters has freely flowered in the spring, although fully exposed and without any protection ; and the past winter has been quite disastrous, as many of my herbaceous plants have been killed outright, or very badly damaged, and that, too, notwithstanding my garden was covered with snow all through the very severe weather. The trellis on which my plant is, is back of my kitchen and fronts to the west, and is built high in order to get the top over my kitchen windows so as to get protecting shade to the kitchen in the hot weather. Having got the plant to the top of the trellis I shall now let it wander over the top according to its own will. Of course, I have other plants for the same purpose, as wistaria, *Clematis paniculata*, *Virginiana*, etc.

While I am writing, I must tell you of another satisfactory success. On the north of my house is a strip of about six feet of land, which has always been used as a place to store rubbish. About four years ago I cleared it out, left a path next to the house, and made a three foot bed against the picket fence—it was a stiff clay loam, which I lightened up with sand and muck and enriched with stable manure and fertilized. It took a whole season to get it in order, and three years ago I filled it with Polyanthus, Primulas, Auriculas, Bloodroot, Trillium, Hepatica, Jack in the pulpit, Spring beauty, Ferns, etc. It always gets covered with snow, and having so little sun, the snow is sure to stay, and it keeps frozen up till very late in the spring, so that there is no thawing and heaving out. Along side of the plants, I planted small stones, and put some on top between the rows. Hardly ever has a plant been killed, and a few of the very earliest are now beginning to bloom, and in another week or so I shall have a fine show. I am very proud of my success. GEORGE S. CONOVER,

Geneva, Ontario County, N. Y.

Forsythia suspensa has sometimes trifoliate leaves, and when first seen in this condition it was regarded as a distinct species and named *Forsythia Fortunei*, and *Forsythia suspensa* is only a female form of *F. viridissima*,—seeds of *F. viridissima*, which occasionally produces seeds, give us plants of both species so-called. Mr. Conover's experience is in the line of modern biology,—that the females are hardier than males. This is true both of the animal as well as of the vegetable kingdom.

THE AMERICAN LICORICE.—I noticed in the current number of *The Monthly* your remarks on my article on the cultivation of Licorice Root in the United States.

It affords me pleasure to send you to-day a sample of Licorice Root grown in the San Joaquin Valley, Cal.

An attempt was made some few years since to introduce this plant into California on a commercial scale, but for some reason the experiment was abandoned. The plant, however, took kindly to its surroundings, and there is said to be now growing in the valley about twenty-five acres of it. Here, then, is the nucleus of the new industry already to hand. Cheap labor,—75 cents to $1.00 per day,—cheap land, suitable for it, $10.00 to $15.00 per acre, and the plants at hand to start the plantation Money to invest and ability to wait for returns only being yet required.

H. N. RITTENHOUSE.

The samples sent were pronounced by good judges to be fully equal to any produced in the Old World. Mr. Rittenhouse is doing a good work by keeping this subject prominent. One of the greatest of public benefactors will be he who finally persuades the American cultivator that licorice can be profitably grown at home. America is one of the greatest licorice consumers, it being largely used in connection with the preparation of tobacco, in summer drinks, and in many other ways. A market could probably be found before the grower undertook to raise it, if proper effort be made. The agricultural experiment stations should take up the subject, and show just what are the localities wherein the plant will certainly thrive well.

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INTENTIONAL SECOND EXPOSURE

DOGS GRASS.—Mr. G. C. Watson, Philadelphia, says: "Answering your query in the last issue of the MONTHLY,—what is Dogs grass? I would suggest that the grass referred to is the crested Dogstail grass or crested Dogstail, (*Cynosurus cristatus*) a highly esteemed variety for lawn making. The seed has been rather high priced and fluctuating for one or two seasons back."

Is there any great demand for this Southwardly—Mexico for instance—the district of country in which this term is used? The *Cynosurus* can hardly be adapted to a warm country.

WOOD ASHES.—Save the ashes from the firepile. The fertilizing value of wood-ashes is becoming more recognized. In every gardening establishment there is a considerable quantity of prunings, old lumber, etc., burned to get rid of. While this has not got the manurial value of hard-wood ashes, still it contains a considerable percentage of potash, as evidenced by the fact that the farmers obtain their lye from it to make their home-made soap. Remove it to a shed before the rains leach it, and render it valueless, or, if nothing better can be done, cover it with old shutters, till you have time to screen it and spread on the land.

WM. FITZWILLIAM,

Orange, N. J.

THE POST OAK AND OTHERS IN MISSOURI.—Mr. Jos. G. Barlow, Cadet, Missouri, writes:

"There is a species of oak that grows here mostly along the sides of rocky ravines, especially along the brooks, that is unusually beautiful, graceful and delicate. When the leaves are fully grown, I will send you some examples. Now I think of it, I wonder whether you have noticed or seen any specimens of the post oak, *Quercus obtusiloba*, that have had room to develop naturally, how gracefully the lower branches curve to the ground, and what a handsome pyramidal shape the tree assumes, as well as being something of the weeping order. Rather a queer idea, you will probably think, in respect to the generally stiff looking oak."

This brings to mind a pleasant incident in the experience of the senior conductor of MEEHANS' MONTHLY, which occurred many years ago. He was collecting plants in the lonely woods of Missouri, when not expecting to meet a human being, he suddenly saw a man on his knees before a little spring, rubbing his knuckles together in the stream, much as he had seen French women when washing clothes along the coast of Brittany. Supposing the man was a lunatic, he was cautiously approached, and found to be rubbing handfuls of nettles—*Laportea Canadensis*—so as to get the green pulpy matter out, and have the clear fibre exposed.

Mutual introductions followed, when it was found that two men who had long heard of each other but had never met, had come together,—Thomas Meehan and Benedict Roezl. The reader may be sure that the vegetation around us formed part of the subsequent talk. Overhanging the huge rock on which we sat were oaks exactly fitting Mr. Barlow's description, and which we decided to be *Quercus castanea*, of Muhlenberg. It is certainly a beautiful tree, and deserves introduction to cultivation. The finest post oaks the writer has ever seen were in the Indian Territory, but he has no recollection of seeing them any where of the curving character referred to.

LARGE CHESTNUT TREES.—Mr. Theo. D. Rand gives the *Public Ledger*, of Philadelphia, dimensions of some large chestnut trees in the vicinity of Philadelphia, as follows:

"On the place of Mr. Joyce, northwest of Rosemont Station, Montgomery County, Pa., is one measuring over 25 feet, four feet from the ground. This giant is clearly visible from Pennsylvania Railroad trains.

"In Newtown Township, Delaware County, is one measuring 24 feet, four feet from the ground.

"On the line between Delaware and Montgomery Counties, about half a mile east of Upton Station, is a very fine chestnut, and, to the praise of the supervisor be it said that, although in the highway, it is permitted to stand. It measures nearly 21 feet. There is one of 20 feet a quarter of a mile north of St. David's Station.

BOTANICAL GARDENS. — Professor Seelye reports to a Boston paper that the botanical gardens connected with the Smith College, of Northampton, Mass., is probably second in interest only to that at Cambridge.

FRUITS AND VEGETABLES.

THE APPLE AS A TIMBER TREE.—In some sections of this country, the apple tree is looked on for its product as a piece of timber, as well as a fruit-producing article. For this reason the old German fruit growers in the vicinity of Philadelphia, always aimed to get a nice straight trunk to an apple tree and train it up comparatively high before allowing it to form a head. Moderns have supposed that the chief object to be gained by this method of training, was in order to facilitate plowing operations, but the ultimate end in having a good trunk for timber purposes was not forgotten. In this particular region, the wood was used chiefly for shoemakers' lasts,—a business which, in the earlier history of Philadelphia, did much to help the trade of that famous manufacturing centre of population. The apple regions have mostly disappeared from that vicinity; but other sections of the country seem to understand the value of apple tree wood. It is stated in the *Country Gentleman* that a fruit grower of Cayuga sold to a well-known firm of saw-makers of Philadelphia,—Disston & Sons,—the trunks of some of their trees, which were cut away because the trees had grown too closely together, to the value of $500.00. In this case, the wood was of course used for the handle of saws.

NEW STRAWBERRIES.—There is no truth in the old saying that "varieties will wear out,"—that is to say there is no truth in it as a general principle, for there are many varieties of plants which have been increased for ages, by cuttings or grafts, that are just as healthy to-day as they ever were. The common banana is a good illustration. This is never raised from seeds, for it produces none. No one ever saw a seed in a banana, so far as the records go. Every plant, probably, that is grown to-day, in any part of the world, has been raised by offsets from some one original plant that lived several thousands of years ago, and yet the banana plant to-day is just as healthy as it ever was; but we find that when under cultivation, some varieties do deteriorate. There is scarcely a variety of strawberry grown to-day that was popular ten or twenty years ago. The Downing, the Wilson, the Cumberland Triumph and many others will be remembered by the strawberry-grower. It is not because of any innate wearing out; but simply because of the attacks of minute funguses, which fasten themselves on to some variety after it has been grown for several years. It may be that the methods of growth lessen the vital power of these varieties, and in that case these minute funguses attack them much more readily than they do those with a greater vital power. At any rate, it seems to be necessary that continual introductions of new varieties should occur, to take the place of the older ones.

MARKETING FRUITS AND VEGETABLES.—Most raisers of fruits and vegetables, who grow them with the expectation of turning them into profit, find little difficulty in producing them; but are utterly at a loss when the time comes to find a profitable market for them. Even beginners in fruit and vegetable raising find this difficulty, and it is only after considerable experience that they are enabled to find out how to dispose of their crops to the best advantage. The more prudent beginners find out before hand where they can sell, and it is said that in some towns where the florists raise mushrooms as well as flowers, bargains are made with certain city storekeepers or market men, to take all they can raise, at a certain figure. Of course, the price is comparatively low when arrangements are made in advance this way; but it gives a beginner a certainty of something for his efforts, and in the meantime it adds to his experience as to where the best markets can be had.

SUMMER PRUNING.—Intelligent horticulturists have almost given up trying to educate the public to put away the hatchet, saw, shears and to a great extent the pruning knife, and do all with the finger and thumb in May and June. In the old world this knowledge is more diffused. Writing of orange culture in Italy one of our consuls says that there the object aimed at in pruning is to bring the greatest surface of the tree possible to the direct action of air and light. The spherical form is considered best. To keep this form shoots are pinched off in June each year. In the early spring weak and dead wood, and forgotten useless shoots, are cut out to let the light and air in among the branches; a sharp knife must be used.

VARIETIES OF AGRICULTURAL AND GARDEN SEEDS.—It is common to talk of hybridization as a factor in the great number of varieties of farm and garden seeds which exist. It is said, for instance, that seven hundred varieties of grain have been produced by hybridization, and there are probably four hundred still in existence. Very few attempts at hybridization have been made with either grains or garden seeds,—almost all were a result of selection. There is naturally a power in plants to vary as in human beings,—they can run from one extreme to the other. The improver simply selects the forms that come nearest to his ideal of improvement, and these selections when made usually reproduce themselves with tolerable accuracy. For instance, a plant of a bush bean, usually producing yellow beans, may without any explanation that we can understand, produce a plant which will have white beans. If these white beans are saved and sown, white beans will result, except perhaps in a few instances when there will be a tendency to turn to the original yellow; but as a general rule any variation of this kind is truly hereditary. It is important to notice the distinction between hybridization and selection, as it gives us a better idea of the varying powers of nature.

GROWING CUCUMBERS FOR PICKLING.—Growing cucumbers so as to have a large quantity of small ones for pickling, is quite a distinct art of culture from growing them for ordinary uses. In order to have them bear abundantly, and not get large, they are usually sown in long ridges, and suffered to grow up rather thickly together. The vines are continually being pinched back, in order that they may produce a large number of comparatively small shoots, which naturally produce weaker cucumbers than larger and stronger shoots would. They usually bring, at wholesale, from fifteen to twenty dollars a bushel.

MORELLO CHERRIES.—Birds are said to have a sweet tooth, as well as members of the human family, and can tell a sweet cherry from a sour cherry better than the average boy, who is supposed to know more about cherries than any other creature. They certainly let alone the sour class of cherries, as the Morellos are usually termed, when they have the chance of foraging on the sweeter kinds. For this reason the Morello or "pie" cherries, are much more popular around cities where birds and boys are likely to be troublesome. A point not generally known is that these trees usually grow as dwarfs, but make quite large trees when grafted on the Mazzard stock. They grow dwarf, and are very productive when grafted on the Mahaleb. If not quite as productive as when grown on the latter, the fruit is much finer in every respect, and for this reason as well as from the fact that they make larger trees, they are more popular for the situations indicated.

FIRE BLIGHT IN THE PEAR.—This fearful disease, which often blackens the leaves of large branches in the course of a few days, was more severe on pear trees in Pennsylvania last year than it has been for a number of years past. Like the epidemics that afflict the human race, this disease seems to come and go without any apparant reason. It is more than likely that for a number of years to come, it will not be as severe as it was last year, and then again will come a season when it will exist to a destructive extent. The pear-grower has learned not to be frightened by its appearance to such an extent as to abandon pear-culture. The diseased portions are cut away, and the tree seems to go on as well as ever. If the disease has been very destructive, so as to render the taking out of the tree necessary, another is planted in its place. Nothing has yet been discovered that will prevent the ravages of this disease, simply because no one knows when it is coming.

THE ELDORADO BLACKBERRY.—The Eldorado is said to be an accidental seedling blackberry growing in Preble Country, Ohio. It is a large, somewhat conoidal fruit, bearing large clusters, and ripening well together. It is said to be remarkably healthy, and on that account proves very hardy.

THE KEEPSAKE GOOSBERRY.—The Keepsake is a large oval variety of the English race of gooseberries. It is said to be quite as large as the Industry, and it does not seem to mildew as easily as some other varieties of the foreign race.

THINNING OUT YOUNG FRUITS.—The greedy fruit-grower hesitates to thin his apples, pears, peaches or similar fruits, looking only to quantity as his reward; but the edible qualities of the fruit of the over-bearing tree is never good. Those who have the courage to thin their fruits in the early stage of growth, not only get larger and finer fruit, but also fruit of better quality. In the pear tree one who tries the experiment will be surprised to find how vastly superior in quality is a pear from a tree in which a larger number were thinned while the fruit was still young. The proper time to commence thinning is as soon as the fruit commences to swell. Nature herself throws off large numbers which she feels she will be unable to bring to perfection, and in a week or so after this has taken place will be the time for the good gardeners to help her still further by thinning out some of the rest.

PEAS IN THE FALL.—Although canned peas have got into such general use that they are continually on the table from the beginning to the end of the year, no method has been devised by which the canned product will equal the freshly gathered article. In brief, every good amateur gardener likes to grow his own peas. In the warmer parts of our country, it is extremely difficult to get them late in the year. The pea is a cold-country lover, and soon becomes weak and sickly, where the summers are hot; but if the soil is dug or loosened to the depth of a foot or more, so that the roots can get down into the colder soil, and a cool spot in the garden be selected, very good peas may be had by sowing as late as mid-summer.

THE GAULT AND COLUMBIAN RASPBERRIES.—The Gault is a variety of the Blackcap, found wild by Mr. W. C. Gault, of Ruggles, Ashland, County, Ohio. The terminal or "crown" berry is described as being an inch across. From a photograph sent to the conductors, the branches are often flattened, as we see sometimes occur in asparagus, and similar plants, when the bunches of fruit are enormously large. It is said to have the property of bearing good crops several times a year. The Columbian is a variety introduced by the well known firm of James Vicks' Sons, Rochester, N. Y. It is said to have been raised from the Cuthbert, and will sometimes grow so tall that the fruit has to be gathered from chairs, in an amateurs garden. It is presented chiefly as a profitable variety for canning, evaporating, as well as for general market purposes.

THE BEACH PLUM.—It is interesting to note that plants usually dwarf when in a state of nature, occasionally produce varieties that take a somewhat tree-like form. This is not only true of woody plants in general, but of varieties of fruits. Recently MEEHANS' MONTHLY called attention to the fact that a very fine tree-like form of the Sand Cherry had been introduced in Michigan. The Beach Plum is usually but two or three feet in height, and almost trailing on the ground; but the variety known as Bassetts' Plum will make a tree as large as an ordinary plum tree. This variety was introduced by Messrs. Wm. F. Bassett and Sons, Hammonton, N. J., and was found to be a valuable addition to garden fruits.

DWARF BEANS IN AUTUMN.—Much is said about the value of deep soil for vegetables, which is never better illustrated than in the case of a crop of dwarf beans in the fall. These may be had in almost any part of the Continent, quite late in autumn, by being sown at mid-summer, provided the ground be loosened up to a depth of a foot or more, and especially if this deeply-loosened earth is very highly manured. They may be sown as late as mid-summer, and will then come into bearing late in the autumn, and continue until frost without the slightest stringiness. Stringiness in the dwarf bean mainly results from growing in shallow or poor soil.

GRAPES FOR DINNER-TABLE DECORATION.—Grape vines can be successfully fruited in comparatively small pots, and *American Gardening* makes the good suggestion that the European varieties might be grown this way for decorating tables at great dinner parties; and the delicious fruit, "cut fresh from the vine," would be a point much appreciated.

THE OLDER RASPBERRY.—Of a new introduction, the Older Raspberry, of the "Black Cap" race, Mr. J. N. Cotta, of Carroll County, Ills., reports that it is one of the earliest of the "Black Cap" race, ripening six to ten days before the Gregg and is more productive.

BIOGRAPHY AND LITERATURE.

CAMPING OUT.

When o'er the distant line of hills
  The rosy morning peeps its head,
And stars that through the night have watched
  Now quench their light and go to bed.

I rise from couch of perfumed pine
  And seek the purling brook that flows
Between its fringe of velvet moss,
  When tiny turquoise blossom blows.

I need no marble fountain rare
  To purify and lave and clean,
And when I say my grateful prayer,
  'Tis in His mighty dome of green.

I love the woods.

—RICHARD MANSFIELD.

ORGANOGRAPHY, FOR CLASSES IN BOTANY.—A particularly useful, twenty-five cent tract has been issued by Dr. A. L. Benedict, of Buffalo, New York, which will be of great value to botanical students. All the terms used in botanical descriptions are illustrated by reference to some plant easily obtained. For instance, in reference to the outline of leaves he says Acerose—the pine. Aristate—the thistle. Acuminate—the Elm. Acute—catalpa. Truncate—Tulip tree. Obcordate—white clover, and so on through all terms used.

INTELLIGENCE IN PLANTS.—Mr. Mendenhall, of Minneapolis, Minn., suggests that there is some intelligence in the vegetable kingdom, although, of course, of a very low type. It will be necessary, perhaps, to define what is meant by intelligence, in its broadest sense. There was at one time a distinction made between the intelligence of man and that of animals. The intelligence in animals was described as instinct. It is now understood that the difference is only in degree,—animals have the power to compare facts and make deductions from the facts. This, of course, is a function of intelligence. It would be hard to say whether plants have or have not power of discrimination of this kind. Mr. Mendenhall's question is probably one that will never be intelligently answered.

THE FRENCH NATIONAL FLOWER.—A correspondent remarks, in relation to the Iris, as follows: "In your leading article on *Iris*, I regret that you did not mention the botanical fact that the French National Flower is *Iris Germanica*. Thousands of Frenchmen would go into hysterics if they knew it." It is, indeed, remarkable that a flower exclusively German should be the national emblem of the French people.

POLYGONUM SACHALINENSE. — Mr. Blanc sends us a rather lengthy article protesting against MEEHANS' MONTHLY discouraging the extensive cultivation of *Polygonum Sachalinense*, which it is not necessary to publish, as it is not the province of this magazine to discourage the planting of anything.

As a mere matter of information to the readers it was stated that those who had already grown *Polygonum cuspidatum* would have some idea of the habits, character and value of the new species, as they were botanically closely allied. If we are not as enthusiastic as to its general value to the American cultivator as some of its advocates, it is chiefly from experience with former "booms," and we do not think caution misplaced.

CHANGING PLANT NAMES.—Mr. C. F. Saunders, of Philadelphia, writes approvingly of the conservatism that is against the change of the names of plants which have once obtained a wide place in literature. He makes the sound observation that if even it were advisable for critical botanists to change names in their scientific vocabulary, it is too discouraging for amateur botanists to have to follow these changes, because of the want of works of reference. He thinks that in general literature the changing of names would lead to a babel of confusion. While the position is sound that the prior name given by an acknowledged authority ought to be the one generally adopted, the fact that it has not been generally adopted deserves equal consideration.

HORTICULTURE AND LONGEVITY.—The love of gardening seems productive of long life. We rarely hear of an active garden lover dying young. On the table is a letter from Mr. H. A. Terry, of Crescent City, Iowa, who must have passed the allotted term of three score and ten, but whose letter is as full of enthusiasm on gardening affairs as if he were just entering on life's career. Another pleasant instance of horticultural longevity is illustrated in Friend Isaac Hicks, of Westbury, Long Island, who has passed his eightieth year.

GUIDE TO FINDING ALL THE WILD-GROWING TREES AND SHRUBS OF NEW ENGLAND BY THEIR LEAVES, by E. Knobel, Endicott, Mass.—A very cheap and useful little guide book. It is not always possible to tell with absolute certainty a species by a leaf; but one can in most cases, and the illustrations of leaves of every species, as given in this guide, will be a great aid in every case.

LOVE VINE.—In MEEHANS' MONTHLY for March, I notice an article by E. E. Bogue, on the "Love Vine." It seems queer to me to have it confounded with "Myrtle" or *Vinca*. It has been several years since I have seen any of the *true* "Love Vine."

I do not now remember its botanical name, although I have seen it in print, but twenty years ago, on the prairies of Illinois, I have seen quantities of it growing on weeds and bushes. It is a *parasite*—that is, has no roots in the ground; but grows on other plants. As I remember it, it is about the *size* and *color* of *Vermicelli*, only more of a yellow, has no leaves. I have heard that it bloomed, but have never seen a blossom myself, so cannot tell what they are like.

It grows near the top of plants, and I have seen patches of this Love Vine six feet across, and so thick that it hid the original plants it grew upon.

Children and young people would pull bunches of it and tie it around a weed or bush and *name* it. If it grew, it was a sure sign that that person "was true," "loved me," "will marry me," or what other thought was in their mind at the time. I, myself, have tried the charm many a time in my girlhood.

"Lover's Vine" was another name for it then. A friend, who has traveled extensively, tells me he has *seen* it growing in Tennessee, Virginia and Texas.

The way he has seen the spell woven was for the lover to take some of the vine in his hand, whirl it three times around the head, and throw it behind him, and let it lie wherever it fell; and if any of it grew, the person named loved him, and the love was in proportion to the quantity which grew.

The vine winds itself around the stem of a plant, and sends out branches which reach up and take hold, and in turn send out more, and so it spreads as far as it can reach.

I am sure this is the *true* Love Vine of the Indians. MRS. M. A. BUCKNELL.

New Douglas, Ill.

The conductors must compliment the lady on the excellent popular description of a plant, which the botanist will see at a glance refers to the family of *Cuscuta*, or the Dodders, as they are known in the Old World. The flowers are very small, but are like minute morning glories. The plant, indeed, belongs to the natural order *Convolvulaceæ*, to which the morning glories belong.

THE CULTIVATION OF OUR WILD FLOWERS.—Miss Bessie L. Putnam says: "I, too, rejoice that native flowers are gradualy finding a place in cultivation." Concerning *Centrosema Virginiana*, Vick's Floral Guide for '95 states that "this plant is the one which was formerly sent out as *Centrosema grandiflora*. The identity of the plant was then not known to us. It was introduced by a party who claimed that it was of foreign origin. Since then we have had the opportunity to examine more particularly the claims made by the introducer, and are satisfied that the plant is *C. Virginiana*, a native of the Southern States. The growth and blooming of the plants the past two seasons have fully confirmed this view, and we now offer the seeds under their proper name. That one of the so-called foreign novelties proves to be an American plant should enhance rather than detract from its value in popular estimation."

There is little excuse, in these days, for sending out plants under wrong names. A reference to any plant dictionary would show that *Centrosema grandiflora* is a Brazilian plant, and no more likely to be found in New Jersey than a pineapple.

GENERAL NOTES.

THE ILLUSTRATIONS IN MEEHANS' MONTHLY.—Mr. C. F. Saunders, of Philadelphia, kindly sends the following extract from an educational work, "Flowers in Pen and Ink," with the complimentary remark that the drawings in MEEHANS' MONTHLY aptly illustrates the sentiments expressed:

"The great charm in copying (our native ferns) lies in absolute fidelity to nature. When the fern is before you for study, do not begin by pulling off a little dried stalk here or a half withered frond there; but rather seize upon such imperfections, being sure that you will have a result all the more attractive by being true to life. We make, indeed, a great mistake when we imagine that any drawing of a plant must give only perfect flowers and leaves. The object in drawing it at all is to recall to the observer the plant as it is in nature; and certainly it is the exception to find plants of any kind rigidly perfect in branch, flower and leaf."

The compliment is a pleasant one, though it has long been known that our illustrations are used as models in drawing schools. It is, however, cheering to have the fact generally recognized. The *Brooklyn Daily Eagle* of May 12th, reviewing a work on flowers beautifully illustrated, incidentally remarks:

"The drawings by Marion Satterlee are admirable. Nothing better has been published, except the color plates of The Native Flowers and Ferns of the United States, published by Prof. Meehan, of Philadelphia" of which, as the reader knows, MEEHANS' MONTHLY is practically a continuation. It is gratifying to feel that it is so freely recognized, that MEEHANS' MONTHLY is doing much to sustain the high character of floral art in America.

A LARGE OAK.—An illustration in the London *Gardeners' Chronicle*, which we reproduced in the June issue, pictures what is believed to be the largest oak in England. Its history is away back in the dark. It is 78 feet in girth at the ground and 48 at 3 feet. It is hollow with age, and some of the branches are supported by props. It is known as the Cowthorpe oak. Eighty-four persons — holiday children, teachers and friends have stood, without crowding, in the hollow of the trunk. It will be noted that this specimen of the English Oak, like most trees of England and the north of Europe, though with a large trunk, is low and squatty. Though the American White Oak, the near neighbor of the English, may not be as wide, it could probably present a much larger trunk, in proportion to width, than the English. It would gratify MEEHANS' MONTHLY to have figures regarding fine specimens of American White Oak, describing not merely the diameter, but the height at which the head appears to dispute attention with the trunk.

KNOWING WHEN WE HAVE A GOOD THING.—A correspondent notes that a fine specimen of a tree was commented upon favorably by MEEHANS' MONTHLY. A few months before the owner would have gladly sold it as fire wood for a few dollars. Since the appreciative notice of the MONTHLY, no money can buy that tree, and the owner's family takes pride in showing it to any one who cares to look and see. After all, this is the way of the world. The wife of the writer of this paragraph bought for a few cents, at a public sale at which she was accidentally present, Rush's "Winter," one of the carvings which made Rush famous, and for which he probably obtained $500; and many a florist or fruit grower has some variety of fruit or flower which would make his fortune, if he only had intelligence enough to know a good thing when he saw it.

THE CAMELLIA JAPONICA.—It is surprising that these once popular flowers, have so nearly disappeared from the collections of the florists. Almost all nurserymen had to keep them in the early part of the century. At the present time Parsons and Sons Company, at Flushing, N. Y., are possibly the only northern firm that grows them largely.

ARETHUSA BULBOSA.

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NATURAL ORDER, ORCHIDACEÆ.

ARETHUSA BULBOSA Linnaeus.—Flower ringent; the lanceolate sepals and petals nearly alike, united at the base, ascending and arching over the column. Lip dilated and recurved spreading toward the summit. Column adherent to the lip below, petal-like, dilated at the apex. Anther lid-like, terminal, of two approximate cells; pollen masses powdery—granular, two in each cell. (Gray's *Manual of the Botany of the Northern United States*. See also Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.)

As there is but one species of this beautiful genus, the description of the genus has been given from Dr. Gray instead of the description of the species only, as usually given. In addition to this description, Dr. Gray adds, "beautiful, low herbs, consisting of a sheathed scape from a globular solid bulb, terminated usually by a single, large, rose-purple flower. Leaf solitary, linear, nerved, hidden in the sheaths of the scape, protruding after flowering. Dedicated to the Nymph Arethusa."

In regard to the name Arethusa it may be noted that, though a name serves its purpose if it have no meaning at all, it is always pleasant to know what it was that suggested the application; and, if it had a previous history, to know all about it. The student of classical history will remember the story of Arethusa as told in the fifth book of Ovid's Metamorphoses. Arethusa was one of the Nymphs who served in the train of Diana. She is represented as being very beautiful, but so modest withal as never to be conscious of her superior loveliness. She was very fond of the babbling brooks and running waters, and was never so happy as when under the shade of the willows watching the waters as they ran along. On one of these occasions she was made love to by Alpheus, the god of one of the rivers, which was naturally very objectionable to a young lady who, as the servant of Diana, had foresworn the society of men; so she hastened from the spot followed by Alpheus. Fearing she might be overtaken she appealed to Diana for protection, who, knowing her love of the waters, turned her into a fountain, and in this way she escaped her lover's importunities. The name was first given to our plant by Gronovius, who was fond of giving classical appellations to plants. He seems to have been led to this by a remark of Clayton, who sent the plants from Virginia to that distinguished botanist in the early part of the last century. He observed that "this orchid had a great affinity for damp places," and this expression compared with the flower's modest beauty no doubt brought the classical story of Arethusa to the botanist's mind. Under the laws of priority, by which we are compelled to accept the oldest name which accompanies a good description, it would appear that we came near losing this pretty name. Gronovius named it in 1739. Dr. John Mitchell had noted that this plant was distinct from the genus with which it had been associated, and described and named it *Orchidion*. This, with the names and descriptions of other plants, he sent to Collinson in 1740, just after the appearance of Gronovius' name. Gronovius appears to have named it Arethusa Claytoni,—but the name of "bulbosa" had entered into the prior descriptions, and Linnaeus preserved it in the form we now have it, *Arethusa bulbosa*. By Bauhin and others of the older botanists it was classed with the Hellebores. Plants in those days were associated together very often from their leafy resemblances. The Veratrum was then one of the Hellebores, and as many orchids have leaves very much resembling these, they were classed in that way. As "*Helleborine Mariana Monanthes*" our plant is figured in Plukenet's great work,—the specimens having probably been furnished to this learned author, as so many others were, by Virginia's early botanist, David Banister.

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All orchids have a special fascination to botanists; but to the critical student *Arethusa*

INTENTIONAL SECOND EXPOSURE

is one of unusual interest. The degrees of union among the floral parts very often decide different natural orders. In the Lilies and Amaryllids the flowers are all formed on the same plan. The perianth or sepals and petals originate from beneath the ovariums in both cases. But in *Liliaceæ* the ovarium is not united with the perianth, and a capsule entirely disconnected is the result. Botanically, it is said the ovary is superior. But in *Amaryllidaceæ* the lower part of the perianth is united to the ovarium, and the perianth is thus made to appear on the apex. We say then the ovary is inferior. It is wholly a matter of union of the parts. Orchids approach Amaryllids in having the ovary inferior; but while the latter usually have the parts of the perianth united for a considerable distance beyond the ovary, orchids have the sepals and petals quite distinct. In *Arethusa*, however, there is as much union of these parts as in an Amaryllis, and, so far as this goes, it may be taken as a connecting link between these natural orders. From another allied natural order, *Iridaceæ*, the difference is also one of union. In the Irids, the stamens and pistils are distinct; but in Orchids these are united, and are known collectively as the column of an orchid flower. Usually the stamens are a little larger than the stigma, and in the case of *Arethusa* the anthers lie down over the stigma like a lid. This has been taken as the chief distinguishing mark of a large collection of genera of *Orchideæ* scattered all over the globe, and which are known as the sub-tribe Arethuseæ. It is difficult for the student to believe in the theoretical structure of an orchid flower. The union of stamens and pistils into the central column, for instance, seems unsupported by any evidence except such as may be inferred from a comparison with an iridaceous flower. But there are often opportunities of verifying these deductions by actual observations, and we have the rare opportunity of illustrating one of these in our plate. It is well known that the pistil is more enduring than the stamens. It often remains long after the stamens have disappeared, and frequently forms a portion of the capsule. One of the plants from which our drawing was made was placed in a flower pot and kept in a greenhouse in order to draw a capsule, should one ultimately form. In this process the stamens decayed away, and all that was left of the column was the slender united style as in figure 2, a, almost as in an Amaryllidaceous plant. In this figure, the inclination of the capsule is rare in *Orchidaceæ*. It has not been the good fortune of the writer to meet with *Arethusa* in fruit in its native locations, and he cannot therefore say how far the characters here given are usual in the species. It seems to be a plant given to variations. Sometimes the scape produces two distinct flowers, and sometimes two united back to back. In the production of leaves also there is much variation. Some botanists describe it as wholly aphyllous, or having no leaves. After the flower has finished its growth, a leaf, however, proceeds from the upper sheath as represented in our plate. The *Arethusa* is not found much below the range of the Southern Alleghenies. It reaches Canada to the north, and extends westwardly to the Mississippi. It is one of that growing and remarkable list, which, confined for the most part to the Atlantic United States, re-appear in Japan. This fact indicates great antiquity, and, indeed, Mr. Darwin believes that the *Arethuseæ* section of the great family of orchids have many of them departed from some very ancient type. The sweetness and beauty of the flowers render them much sought for by the curious. Once very abundant in New Jersey, near Philadelphia, they have been almost eradicated. The one drawn was a chance specimen found by Mr. Isaac Burk. It is sometimes contended that all plants were once adapted only to self-fertilization, and that they became adapted to cross-fertilization through insect agency in pursuance of some good believed to be gained by cross-fertilization over the self-fertilizing arrangements. By the language used in these teachings, one might almost imagine there was a special instinctive for knowledge in plants of what is to be in the future. At any rate the belief is that future good induced the change in this respect. The bright color of the flower is believed also to have been for the purpose of attracting the insect agent. Unfortunately it attracts at the same time the ruthless denizens of large cities, and is an agent in its extinction.

EXPLANATIONS OF THE PLATE.—1. Complete plant with capsule. 2. Nearly mature. 3. Scape with leaf commencing to develop. 4. Back view of a flower.

WILD FLOWERS AND NATURE.

A SUMMER EVENING

It is the hour when from the boughs
  The nightingale's high note is heard,—
It is the hour when lovers' vows
  Seem sweet in every whispered word;
And gentle winds, and waters near,
Make music to the lonely ear.
Each flower the dews have lightly wet,
And in the sky the stars have met,
And on the wave is deeper blue,
And on the leaf a browner hue,
And in the heaven that clear obscure,
So softly dark and darkly pure,
Which follows the decline of day,
When twilight melts before the moon away.
—BYRON.

SPORTING IN CHRYSANTHEMUMS.—It is well known that new varieties of roses, bouvardias and others, have been raised by bud-variation; but this has not been known of Chrysanthemums. Our excellent French contemporary, *Lyon-Horticole*, notes that a distinct variety has been raised from a kind known as "Viviand Morel," and some from other kinds. M. Leveque, President of the Horticultural Society of Côte-d'Or, exhibited a chrysanthemum plant on which were some branches with rose-colored flowers, and others with flowers of a pure, creamy yellow.

THE NIGHT BLOOMING CEREUS.—A great difference has to be made between the "night blooming Cereus" and the *night blooming Cactus*, as it is often called. The night-blooming Cereus is *Cereus grandiflorus*, while the night blooming Cactus is *Phyllocactus latifrons*. The former has rope-like stems, covered with lines of small spines,—the latter has flat, frond-like stems. The latter is an interesting flower, but not nearly as interesting or rare as the former. We learn from a list published by Mrs. Theodosia B. Shepherd, of California, that the common name of the leafy form, or Phyllocactus, is "Queen Cactus,"—and if the botanical names are considered too difficult, and a common name desired, it would be much better to distinguish the two by adopting the California name.

WHY THE SNAKE-ROOT DOES NOT SEED.—It has often been noted that the *Cimicifuga racemosa* often fails to perfect seed, and imperfect flowers have been called in to account for it. The following interesting note from Mr. E. Newlin Williams gives a good reason: "Last spring I brought to light a fact which has eluded me for several seasons, namely, the cause of the holes in the mussel-like pods of the snake-root (*Cimicifuga racemosa*). Last July, as the flowers were just bursting into bloom, I found a little pale-green worm, a trifle larger than a chestnut worm, on almost every budding raceme, and invariably with his head buried in the flower bud. On examination, I found he bored quite through the parts of the still closed flower, and feasted upon the tender substance of the pod which was to be. Were it not for the raids of this little fellow, the undergrowth of our woods might be chiefly snake-root, and the unique odor of its fluffy blossoms would possess our thickets all July. Some seeds mature in spite of the green enemy. They are dark-gray and prismatic, with one rounded side like a slice of melon."

"*Cimicifuga*" means a driving enemy of bugs,—but it would seem as if the "bugs" were revenging themselves.

RANGE OF THE RHODODENDRON.—In the 11th Volume of *The American Garden*, page 595, Mr. Walter S. Deane states that he and a party met with a fine area of it, of from 12 to 13 acres, on the farm of S. M. Follensbee, near Fitzwilliam, in New Hampshire. This is 77 miles from Boston. He describes it as a literal forest of rhododendrons amidst a grove of spruces and pines. The plants were growing from 10 to 15 feet in height; the flowers varying from rose-colored to white. They were growing in a rich, peaty loam, varying from comparatively dry to a swampy character. This locality is isolated by many miles from others. Mr. Follensbee had a large premium for plants exhibited by him in Boston in 1885 and 1886.

THE FLORA OF THE MOUNTAINS OF NORTH CAROLINA.—Dr. Hanford A. Edson says, in the *Independent*:

"The flora produced under these conditions is exceedingly varied—'composed of a greater variety of genera and species than in any other temperate region, excepting Japan,' said Dr. Asa Gray, in his address before the British Association at Montreal, 1884. Dr. Gray delighted to explore these mountains, and among his pupils are many who have inherited his love for them. The little plant which bears his name (*Lilium Grayi*) is sought by all tourists; but, like the Edelweiss among the Alps, it is in danger of extermination, unless, indeed, our tailors learn to manufacture it, as Swiss tailors make the Edelweiss from cast-off coats of Austrian infantrymen. On the mountain summits, at an elevation of from five to six thousand feet, are great parks of *Rhododendron Catawbiense*, Nature's own planting, and about June 20, these parks are aflame with color. Only a few days later the woods glow with Azaleas, the *Rhododendron calendulaceum* often overarching the brooks and trails with splendor. The lily family greatly prospers throughout the region, and I have had days of excitement in May when every step seemed to put me near some new floral glory. Long shall I remember a steep bank teeming with green life in the midst of which clumps of *Uvularia perfoliata*, with their nodding yellow blossoms, bade me welcome, while near by the gorgeous *Lilium superbum* was just starting its buds where two months afterward I found its whorls of flowers in perfection. Later in the season whole fields of red and gold are seen, Monardas and Rudbeckias maintaining a complete monopoly. The line dividing the evergreen from the deciduous zone is often as distinct and straight as if a landscape gardener had drawn it. Balsam Fir (*Abies Fraseri*) is the characteristic tree of the summits, attaining most noble proportions. Under the peculiar conditions, some familiar herbaceous plants are quite transformed. 'Why!' exclaimed Dr. Charles Mohr, of Mobile, one of our authorities in botany, 'this *Houstonia purpurea* is magnificent. I did not recognize it. See what the altitude has done—the supression of the stem, the broadening of the leaves, the enlargement of the flower. On the breakfast table this morning I saw the blossoms of *Oxalis acetosella* without the leaves, and I did not know the plant although it is a cosmopolitan. We have it in Germany. I have found it in the Sierra Nevadas. Here, however, there is not only the enlargement of the flower, but the painting in of distincter purple lines—the magic of the sunny South.'"

THE LIFE OF A BEE.—Every year, may be seen in papers of considerable pretension to scientific accuracy, statements about various flowers poisoning bees; the only reason for the statement being that the bees are found dead in considerable number beneath the trees. It does not seem to be known generally that the life of a bee is extremely short. Every bee that leaves the hive in the spring is dead before fall, and those which live over the fall die very soon after the spring opens. The death of a bee is usually very sudden—they have been known to fall even in their flight, and to be dead in a few seconds after reaching the ground. This fact about the life of the bee is supposed to be generally known, yet the fact that the statement above quoted is so often referred to in intelligent works, shows that the knowledge is not as widely spread as it deserves to be.

ORIGIN OF PHOSPHATE BEDS.—Professor E. T. Cox, formerly State Geologist of Indiana, and who for many years past has made a study of the phosphate beds of Florida, shows conclusively the fallacy of the prevailing belief that they have resulted from shell deposits. He says that with the evidence before us, of causes now in action that produced the immense deposits of guano on the islands off the rainless coast of Chili and Peru, the islands of the Caribbean Sea, and elsewhere where the droppings of numberless birds are converted into guano, both pulverulent and rock-guano, it is not necessary to construct strange theories to account for the phosphate-deposits in Florida. Unlike Peru, the climate here was humid, and washed out of the guano the soluble salts, leaving the insoluble phosphate of lime.

The isolation of the deposits, their occurrence in detached pockets of greater or less extent, as well as the conformability of the phosphate-rock to the very jagged surface of the limestone on which it rests, all point to the bird origin as guano.

THE FLIGHT OF BIRDS.—It has often been a subject of inquiry by what manner migratory birds find their way southward or northward at various seasons. A strange proposition has recently been made by a prominent naturalist, that they travel by the stars, as mankind would do. This, however, can be regarded as simply a guess. It is well known that birds have a very keen vision, and can no doubt readily take in the various features of their surroundings. There is no more reason why a bird, at some distance above the surface of the earth, could not be able to see a mountain, a lake, or even a collection of buildings, which would be quite sufficient to guide them on the return journey. There seems to be, therefore, no reason for calling in the aid of the stars to help them along. One may take a horse on a hundred-mile journey and turn him loose, and he will find his way home without looking at the stars. They have evidently the gift of taking in the surroundings as they go along, just as easily as a human being would do, and probably very much easier.

ELÆAGNUS PARVIFOLIA.—SEE PAGE 147.

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ELÆAGNUS PARVIFOLIA.—SEE PAGE 147.

INTENTIONAL SECOND EXPOSURE

THE MANZANITA IN NEVADA.—Under date of May 5th, a Washoe County, Nevada, correspondent, refers to the Manzanita, a near neighbor of the eastern Trailing Arbutus, and which is there equally regarded as the harbinger of spring.

"The Manzanita is in fine bloom this year and looks lovely growing among the granite rocks. The mountain behind our house rises on a slope of about 35°, and is covered with large patches of the Manzanita; and under that, in places, the Ceanothus, a trailing variety with lilac flowers. The pink of the bloom can be seen to the top of first ridge, about 500 feet or more; then higher, it looks a greyish pink,—later the white shrubby Ceanothus will show.

Our fruit trees are looking fine. I am sure you would think it strange to see an orchard in full bloom and the mountains just beyond covered with snow. The whole scene looks lovely when the sun shines."

FUNGUS DISEASES.—The black-knot in the plum, the fire-blight in the pear, and many other similar diseases to which plants are exposed from the attacks of minute fungus germs, all originate from a single spore, which finds the conditions in the plant favorable to germination; but it requires very nice conditions to get them to grow, and it is that which renders them so harmless in proportion to the vast injury which they might do if conditions for growth were not nice. Take, for instance, the little germ which causes Yellow Fever, it is utterly harmless after undergoing a temperature below 32°. The germ which causes Smallpox is also destroyed when under a temperature of about 70°, while the young Typhoid Fever plant is literally drowned after being two days in water of a low temperature. When, therefore, any sign of these diseases appear, the best practice is to cut the affected branches away, so that the baleful influence will not spread through the plant system. This is very often the best cure. Some recommend that the spores should be burned; but this rather adds to the number of atmospheric spores, if anything, because the heat carries the spores away before they have been consumed, and tends to spread rather than destroy. During the last few years a great advance has been made in our knowledge of these little organisms, but still there is very much to learn.

THE CAROLINA JASMINE. — It is doubtful whether the reputation of "Araby the blest" for an atmosphere permeated with odors from myriads of fragrant flowers is not in a great degree fabulous. One might almost venture to back our Southern fields and forests against the whole of Arabia, when the jasmine of that region, *Gelsemium sempervirens*, is in full bloom. On the conductors' table, is a branch kindly sent by Miss M. Pinckney, of Charleston, two feet and a half in length, and with *two hundred* expanded flowers, to say nothing of unexpanded buds. The specimen employed in decorating the title page of MEEHANS' MONTHLY can give but a faint idea of the beauty of such a specimen as now described. The odor is somewhat similar to that of the English Wallflower. Unfortunately it is not confined to South Carolina, or it would have given the Palmetto a close race in the choice of a floral emblem for the State.

THE JUICE OF THE SWEET GUM.—Referring to the Sweet Gum, the *American Journal of Pharmacy* says: *Liquidambar styraciflua*, Lin., exudes a sweet gum through cracks in the bark and wounds in the trunk, during all seasons of the year, which hardens on exposure to the air. It is much esteemed by children for chewing, and is soluble in water. This gum yields a balsam more terebinthine in odor, but almost as pleasant as Tolu balsam. This syrup is produced in the Southern States of America. It is transparent, amber-yellow, has the consistence of a thick oil, and an aromatic, bitter taste. It has been used in the form of ointment for healing indolent ulcers and for cutaneous diseases.

POISON GRAPE.—Mr. J. R. Fleury, Belleville, Pa., inquires:—"Please let me know if there is such a thing as a poison grape, and if so, how can I distinguish the vine from the other."

No true grape vine is poisonous. The words "vine" and "grape" are often synonymous. Grapes are often spoken of as the fruit of the vine, and in this sense, probably the Poison Vine has come to be occasionally spoken of as the "Poison grape". It is sometimes called "poison oak," or, one species, "poison ash,"—though it is neither an oak nor an ash.

GENERAL GARDENING.

THE GARDEN-LOVER.

"I love my garden well
And find employment there;
In tending every shrub and flower
With still unwearied care."

ELÆAGNUS PARVIFOLIA.—So much attention has recently been given to various species of *Elæagnus* as ornamental plants, and so much confusion of names in the various species has occured, that a word or two on one of the best known in our gardens may be of service. This was introduced from the East Indies to the Meehan Nurseries forty years ago, under the name of *Elæagnus reflexa*. De Candolle's "Prodromus" gave this as a synonym of *E. parvifolia*, and under this name it has been spread far and wide over our country. Since introductions from Japan have become common, we have *E. umbellata* from that country, and our botanies tell us the other two names must be regarded as synonymous with this.

It is just here that a difficulty between botanists and horticulturists arises. For the purposes of botanical classification, there is probably not differences enough between the East Indian and Japan plants to keep them separate as species; but surely the nurseryman who sells his customer the one for the other, will get into trouble. And it is so of many other things that botanists regard synonymous. Nurserymen must keep them separate under their distinctive names. This is why the pretty plant figured on page 145 is still given under the name of *E. parvifolia*. Any nurseryman can see a difference between it and *E. umbellata*.

It has been listed in catalogues as "Silver Thorn," and been found to make excellent hedges, specimens used as such on the Meehan grounds have been in existence for over a quarter of a century. Though useful in this respect, it is hardly stiff enough to compete with honey locust or osage orange,—but it comes in well as an ornamental element. As a shrub, its abundance of mottled pink and white berries, which follow the sweet jasmine-scented flowers, gives it prominence.

In connection with this confusion of names, it may be noted, that the *E. longipes* is now pronounced not different from the older *E. multiflora*.

HYBRID ORCHIDS.—The family of orchids are extremely remarkable from the fact that they are so constructed as, in almost all cases, to be unable to receive their own pollen. They have to be fertilized by the aid of insects, or in some other way. In addition to this, they are extremely sensitive of foreign influence, and not only do species readily hybridize, but even what are considered by botanists as very distinct genera will intermix; and hybrids have been produced, by cross-fertilization, of such a distinct character, as to be regarded as distinct genera in themselves. The critical botanist is so completely puzzled, in order to classify orchids, that he has to know by actual knowledge that a form before him has been produced by hybridization. In other words, it is impossible to tell a hybrid from what might be called a natural species. A French author, Monsieur Bonhof, has come out with a dictionary of hybrid orchids. In the Old World, the book is regarded as essential to every one who desires to make a critical study of this beautiful genus.

SACALINE.—Mr. Falconer, the able and intelligent editor of *Gardening*, states that he has had the *Polygonum Sachalinense* under cultivation since 1879, and that it is a much more gigantic plant than the *P. cuspidatum*, and is not as useful for ornamental purposes as the latter. He also finds that the former is not as pestiferous a runner as the latter, and this is very much in its favor, as one of the chief objections to the plant has been that it would prove as bad a thing to get rid of as the Canadian Thistle. He says he has had no experience with it as a forage plant, for which it is being much commended.

TREE PLANTING.—In your issue of MEEHANS' MONTHLY for June is an interesting article on guarding trees. In this article you have made a complimentary reference to the Tree Planting and Fountain Society of Brooklyn, and honored it by using its cut to illustrate your article. Your remarks to the effect that nothing used as a guard for a tree should be firmly driven into the ground, and your reasons given for the same meet with our hearty approval. Please see pages 21 to 24 inclusive of our Bulletin No. 1, a copy of which I send to you. You will see there that we draw a clear distinction between a guard and a support. By guard we mean any contrivance used to protect a tree from the dangers to which its location renders it liable. By support, we mean something to hold a newly transplanted tree erect until it is able to support itself. We hold that every tree transplanted into its final place should be supported in an erect position, and against winds, until it is firmly rooted—and able to support itself. Only such trees need guards as are in danger of injury. Guards should protect from injury, and not cause it. For further remarks upon supports and guards see Bulletin as referred to above. That you may clearly understand the method of fastening a tree to its support by this Society let me say that, according to our standard, a tree suitable for transplanting into streets should have been grown in a nursery sufficiently far from other trees that when it is nine or ten feet high it will be ready to transplant. It should be from one and one-half to two inches in diameter one foot from the ground, and a point the thickness of one year's growth at the tops, tapering gradually all the way. The shaft should be straight. It should have been transplanted in the nursery several times, according to variety, and pruned to a single main shaft. This has reference to trees to be planted along streets, and does not include the American Elm and a very few varieties of like habits.

You have defined ideal planting. The ideal tree with ideal planting would be quite sufficient; but experience has taught us that the actual tree is apt to differ from the ideal tree, and that actual planting is liable to differ from ideal planting. Our support is intended to correct both differences. If the shaft be not straight it can be fastened to the support so as to nearly, and perhaps quite, straighten it. It will also hold the tree in a vertical position until it has become firmly rooted and is able to support itself. By this time the shaft will have grown straight. If a guard is needed, the support will hold that until the tree is able to hold it.

The artist in making a drawing of our model for the cut did not represent our method of fastening the tree to the top of the support. We use listing, such as cabinet makers use, about three and one-half inches wide, and quite thick. We cut it in pieces about one foot long. A piece is looped around the tree at the top of the support and firmly tacked to one side of the support. Another piece is looped around the tree in like manner below and against the first and is tacked firmly to the other side of the support. If the shaft be crooked, other pieces of listing may be so applied as to hold it straight. This arrangement will hold the tree in proper position, will not interfere with its growth and will prevent chafing against the support. There will be no danger of the tree breaking against the top of the support by the wind if proper care be taken in pruning and if the support be removed in due time.

Allow me here to extend to you sincere thanks in behalf of this Society for the uniform kindness shown by you in your answers to our numerous letters of inquiry and also for the valuable information you have given.

Very respectfully,

LEWIS COLLINS.

SYRINGA LIGUSTRINA PEKINENSIS PENDULA.—The White Chinese Weeping Lilac is a beautiful acquisition to our garden, and fully realizes all the catalogues have said in its favor. It commenced to bloom here about June 10th. The feathery white inflorescence has a beautiful odor, though rather a little heavy.

WM. FITZWILLIAM,

Baronald, Orange, N. J.

THE PRIVET IN SOUTHERN ILLINOIS.—A correspondent reports that the privet, which makes such a beautiful hedge in the North, fails to give satisfaction at Alton, Ill., and, presumably, elsewhere in that region. This refers probably to the English Privet. It would be well to know how the Japan Privet behaves there.

CACTUS GARDEN AT FAIRMOUNT PARK.—A cactus bed, or, rather, a bed formed of succulent plants, was among the last year's attractions at Fairmount Park, and of which we give herewith an illustration. They love hot and somewhat dry places during their growing season, and the raised bed, faced by echeverias, suits them exactly. Being themselves more like the work of man than the work of nature, the artificial character of the mass will be deemed as good taste in landscape gardening. Some one or another is in flower at all times, so that there is a continual interest in a visit to the queer things.

CACTUS GARDEN AT FAIRMOUNT PARK.

PRUNING HEDGES.—Under date of June 21st, a Long Island correspondent inquires: "I wish to ask for a little information about the treatment of a California Privet hedge set out the past spring. The plants are from 18 inches to 2 feet high, and about all the twigs and leaves are at the top of the plants,—leaving the bottom very open. Of course I know the bottom will fill up more or less in time, but would it not be better to cut off all the plants *now*, say three or six inches from the ground and let them "break" below?

Would it not have been better to have so cut them back at the time of planting? Is now the proper time to trim an established California Privet hedge?"

It is difficult to answer questions like these, except in a general way.

There are, in the vicinity of Philadelphia, California Privet hedges that are intended only for boundary marks about one foot high and as much wide,—so thick that a bird could scarcely get through. To get such hedges, a pruning at midsummer as suggested, the year following planting, would be just the thing. But if a hedge with as much strength as possible be desired, the hedge should not be cut at all in any way for two years after planting,—then cut to the ground in the winter or early spring. The result would be the springing up of a large number of very strong shoots, which, the midsummer following, could be cut to the approved conical form found to be the best for the greatest success with hedges. This is the rule for all kinds of hedges.

THE ALABAMA SNOW WREATH.—This beautiful ornamental shrub, named by Dr. Gray in honor of its discoverer, Rev. Dr. Nevius, was first introduced to cultivation by Mrs. W. M. Easby Smith, of Washington, D. C., who distributed it to the Washington nurserymen. Mr. John Saul chiefly sent it out to the trade. It is a remarkable plant, from the fact that it only grows in a limited locality, among rocks almost inaccessible, in Alabama.

TREE PLANTING.—In your issue of MEEHANS' MONTHLY for June is an interesting article on guarding trees. In this article you have made a complimentary reference to the Tree Planting and Fountain Society of Brooklyn, and honored it by using its cut to illustrate your article. Your remarks to the effect that nothing used as a guard for a tree should be firmly driven into the ground, and your reasons given for the same meet with our hearty approval. Please see pages 21 to 24 inclusive of our Bulletin No. 1, a copy of which I send to you. You will see there that we draw a clear distinction between a guard and a support. By guard we mean any contrivance used to protect a tree from the dangers to which its location renders it liable. By support, we mean something to hold a newly transplanted tree erect until it is able to support itself. We hold that every tree transplanted into its final place should be supported in an erect position, and against winds, until it is firmly rooted—and able to support itself. Only such trees need guards as are in danger of injury. Guards should protect from injury, and not cause it. For further remarks upon supports and guards see Bulletin as referred to above. That you may clearly understand the method of fastening a tree to its support by this Society let me say that, according to our standard, a tree suitable for transplanting into streets should have been grown in a nursery sufficiently far from other trees that when it is nine or ten feet high it will be ready to transplant. It should be from one and one-half to two inches in diameter one foot from the ground, and a point the thickness of one year's growth at the tops, tapering gradually all the way. The shaft should be straight. It should have been transplanted in the nursery several times, according to variety, and pruned to a single main shaft. This has reference to trees to be planted along streets, and does not include the American Elm and a very few varieties of like habits.

You have defined ideal planting. The ideal tree with ideal planting would be quite sufficient; but experience has taught us that the actual tree is apt to differ from the ideal tree, and that actual planting is liable to differ from ideal planting. Our support is intended to correct both differences. If the shaft be not straight it can be fastened to the support so as to nearly, and perhaps quite, straighten it. It will also hold the tree in a vertical position until it has become firmly rooted and is able to support itself. By this time the shaft will have grown straight. If a guard is needed, the support will hold that until the tree is able to hold it.

The artist in making a drawing of our model for the cut did not represent our method of fastening the tree to the top of the support. We use listing, such as cabinet makers use, about three and one-half inches wide, and quite thick. We cut it in pieces about one foot long. A piece is looped around the tree at the top of the support and firmly tacked to one side of the support. Another piece is looped around the tree in like manner below and against the first and is tacked firmly to the other side of the support. If the shaft be crooked, other pieces of listing may be so applied as to hold it straight. This arrangement will hold the tree in proper position, will not interfere with its growth and will prevent chafing against the support. There will be no danger of the tree breaking against the top of the support by the wind if proper care be taken in pruning and if the support be removed in due time.

Allow me here to extend to you sincere thanks in behalf of this Society for the uniform kindness shown by you in your answers to our numerous letters of inquiry and also for the valuable information you have given.

Very respectfully,

LEWIS COLLINS.

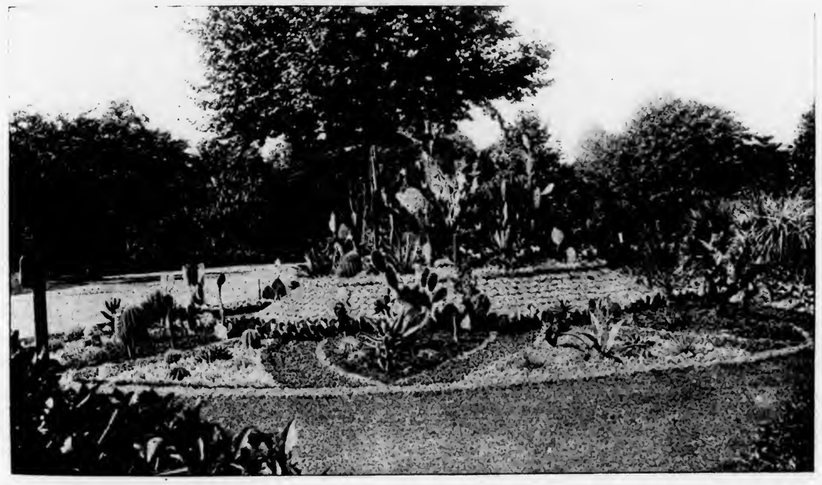
SYRINGA LIGUSTRINA PEKINENSIS PENDULA.—The White Chinese Weeping Lilac is a beautiful acquisition to our garden, and fully realizes all the catalogues have said in its favor. It commenced to bloom here about June 10th. The feathery white inflorescence has a beautiful odor, though rather a little heavy.

WM. FITZWILLIAM,

Baronald, Orange, N. J.

THE PRIVET IN SOUTHERN ILLINOIS.—A correspondent reports that the privet, which makes such a beautiful hedge in the North, fails to give satisfaction at Alton, Ill., and, presumably, elsewhere in that region. This refers probably to the English Privet. It would be well to know how the Japan Privet behaves there.

CACTUS GARDEN AT FAIRMOUNT PARK.—A cactus bed, or, rather, a bed formed of succulent plants, was among the last year's attractions at Fairmount Park, and of which we give herewith an illustration. They love hot and somewhat dry places during their growing season, and the raised bed, faced by echeverias, suits them exactly. Being themselves more like the work of man than the work of nature, the artificial character of the mass will be deemed as good taste in landscape gardening. Some one or another is in flower at all times, so that there is a continual interest in a visit to the queer things.



CACTUS GARDEN AT FAIRMOUNT PARK.

PRUNING HEDGES.—Under date of June 21st, a Long Island correspondent inquires: "I wish to ask for a little information about the treatment of a California Privet hedge set out the past spring. The plants are from 18 inches to 2 feet high, and about all the twigs and leaves are at the top of the plants,—leaving the bottom very open. Of course I know the bottom will fill up more or less in time, but would it not be better to cut off all the plants *now*, say three or six inches from the ground and let them "break" below?

Would it not have been better to have so cut them back at the time of planting? Is now the proper time to trim an established California Privet hedge?"

It is difficult to answer questions like these, except in a general way.

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INTENTIONAL SECOND EXPOSURE

TREES FOR NARROW STREETS.—The Secretary of the Town Council of Driftwood, Pa., writes for a list of shade trees for comparatively narrow streets,—trees that have a tendency to make spreading heads, not growing, when mature, to more than 25 or 40 feet high.

It is pleasant to get such a sensible inquiry. Silver and Sugar Maples, Poplars and similar lofty and upright growers are wholly unfit for street trees in a majority of cases in which they are employed. The following will come within the scope of Mr. Langston's query:

The Colchican, Norway, Sycamore and Ash-leaved maples, *Koelreuteria paniculata*, the American Yellow Horse Chestnut, Bird Cherry, Red, White and Yellow Birches, the Western and Eastern Catalpas, Nettle Tree, or, as it is called in Virginia, when used as a street tree, "Sugar Berry," several Ashes—,especially the Flowering Ash, *Fràxinus Ornus*,—the European, the blue and the green; the Sweet Gum and the Sour Gum, Paulownia or Empress Tree, the Balsam Poplar. Some of the more spreading oaks,—as the Pin, Red, Turkey, Scarlet, Shingle or Laurel and the English (in the north), *Sophora japonica*, European Linden. The English Bird cherry makes one of the most beautiful of intermediate spreading trees, if the fruit is not objectionable, though the birds usually carry them away. For a rapid growing cheap tree of this class (9) there is probably nothing better than the Western Catalpa, *Catalpa Speciosa*.

ROOT FUNGUS.—Microscopic researches have been of immense service to practical gardening. The knowledge of microscopic fungi and their behaviour has enabled us to dispel many a former mystery. That these small organisms follow disease, is as true as it ever was,—but that they originate disease, in many cases, is now beyond dispute. Especially is this true of those fungi which attack the roots of plants. The garden-lover can now tell by a change in the tint of green in the leaves of a plant that some little fungus robber is rifling the roots of its natural food. Why the color should change before the fungus itself reaches the foliage is not clear. No trace of the fungus can be found in the leaf tissue; but that some zymotic influence reaches the whole circulation of the plant after the root has been attacked is well illustrated by the peach, carnation and other plants, where this change following the root attack is well known.

How cuttings will "damp off" in the propagating bench is well known. It was formerly believed to be due to bad soil, bad ventilation, bad watering, or bad something or other at the hands of the operator. But when we remember how it will start in a single spot, and spread to others around this centre,—cuttings in a perfectly healthy condition—while others undet just the same conditions are free from the attacks, there ought to be no question as to whether a fungus parasite can destroy healthy vegetation.

FIG. 1.--DAMPING OFF.

Among the many useful papers in the Bulletins of the Cornell University Agricultural Experiment Station is one on this very subject of "damping off," from the pen of Mr. Geo. F. Atkinson, with some illustrations which are transferred to these pages. Fig. 1 shows a pot of seedling cucumbers which have suffered. The plant itself is named *Artotrogus debaryanus*—so named from the celebrated biologist, De Bary,—though from the want

of a capital letter to indicate a proper name as its root, one might waste some time in hunting through a Greek or Latin lexicon to get at its meaning. These minute plants have to go through the same processes of growth and reproduction as the mistletoe on the apple tree. The technical description given in the Bulletin is also transferred as follows:—

"Figs. 1, 2 and 3, different stages in fertilization; *a* antheridium, *oog*. oogonium, *e. c.* egg cell, *gon.* gonoplasm, *oosp.* oospore.

Figs. 4 and 5 intercalary oogonium with stalk antheridium (*s. a.*) and branch antheridium (*b. a.*), in 4 with gonoplasm separated from the periplasm, and in 5 fertilization complete.

Fig. 6 terminal oogonium with stalk and branch antheridium.

Figs. 7 and 8 different stages in development and fertilization of sexual organs; *b* in 7, oogonium before the formation of the egg cell.

Fig. 9 oogonium with stalk antheridium (*a*) which has fertilized the egg cell, and branch antheridium (*b*) from another hypha than that which bears the oogonium. In this branch antheridium the gonoplasm has separated, and the fertilization tube has formed; but fertilization took place from the stalk antheridium first and the wall of the oospore prevented the use of the gonoplasm from the branch antheridium.

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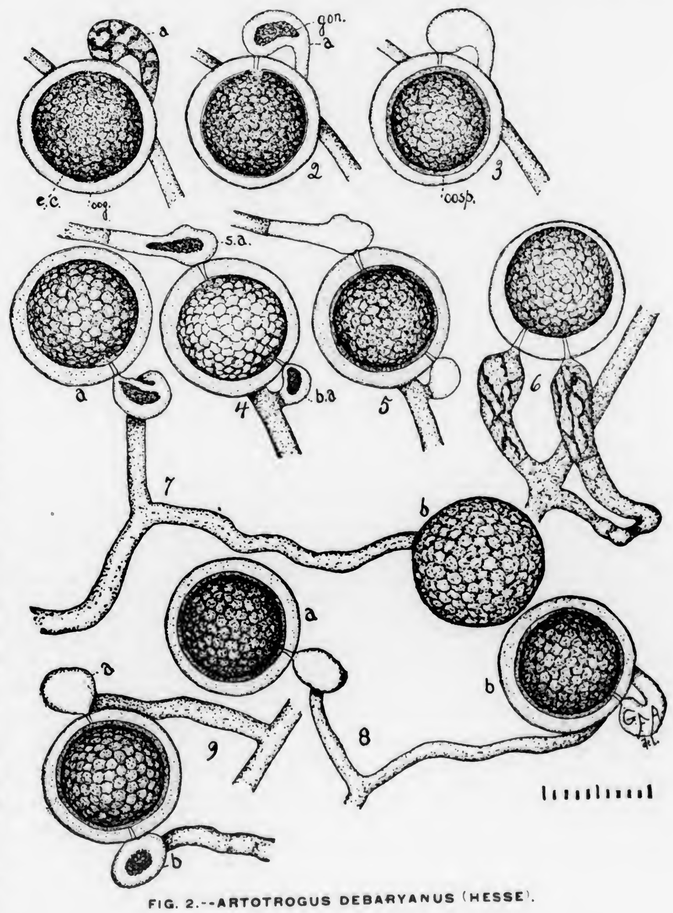

FIG. 2.--ARTOTROGUS DEBARYANUS (HESSE).

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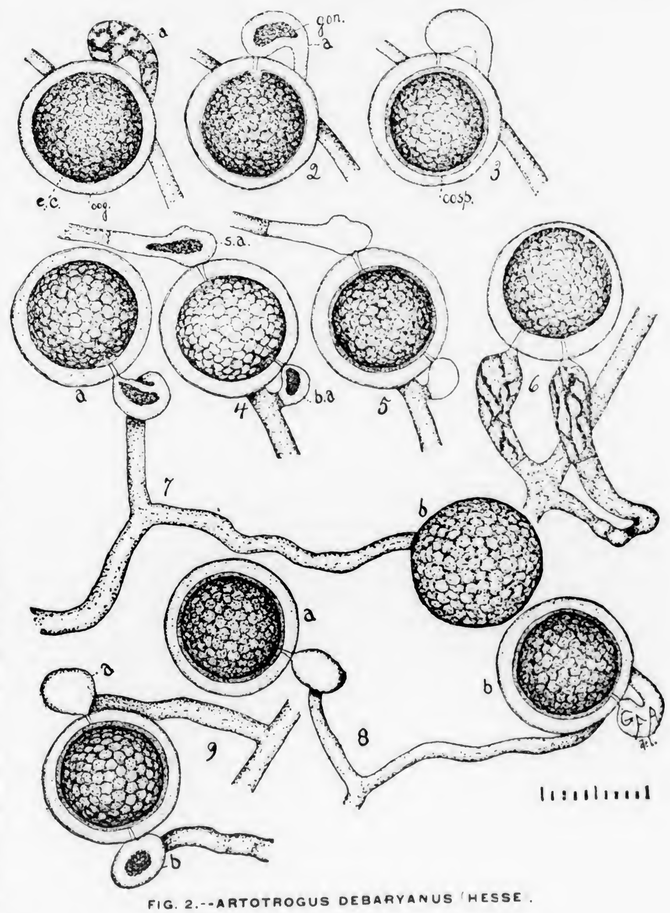

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parts of the world. She received honor, for her work, from leading botanists all over the world. One of the most beautiful works issued on botany, in France, was the one by Ventenat, describing the many new plants which bloomed continually in Josephine's gardens at Malmaison. One of these plants he named after her, *Josephinia imperatricis*,—that is to say, "Josephine, the Empress." This plant was a native of Australia. Other species have since been found in Australia and tropical Africa. It is said that, even in this history, Josephine's greatest delight was to work in her garden.

PARKS AND PLAY-GROUNDS.—Recently a correspondent in MEEHANS' MONTHLY stated that Boston objects to public speaking on the grassed areas in its public parks, and he would also have your readers believe that provisions are not made by the city for all forms of recreation.

"Public speaking *is* permitted under proper restrictions, and this week there are many thousands of Christian Endeavorers holding public meetings on the common. I have visited the parks of most of our important cities, and I know of none in which provision has been made for all forms of recreation in such an intelligent, adequate and thoughtful manner as has been done in Boston.

"In Franklin Park, a playstead of many acres is provided for the little children, and hundreds of them are to be seen upon it daily, playing all sorts of games. A shelter and dressing-room is near at hand with a matron in charge to attend to their needs. Near Franklin Park is Franklin Field, where ample accommodations are to be provided for all forms of active out-door recreation indulged in by men and boys. A shallow pond for safe winter skating is provided in the Park, and skating is also permitted on Jamaica Pond, and every precaution is taken to provide for the comfort and safety of the skaters.

"At the Charles Bank, an open-air gymnasium with apparatus, a running track, a dressing room, and attendants, is provided for men and boys, and another for women and girls. Even the babies are provided with sand courts. Provision is made for fresh and salt water bathing; also for boating, canoeing and sailing in the waters controlled by the Park Commission. All this, and much more, is provided for active and vigorous men, youth and children, who are able to take care of themselves, and who could and would find a play-ground even if the city did not provide it.

"The city also provides quiet walks, fresh, broad and beautiful landscapes, wild woods where Nature's works are undisturbed. It protects the birds, animals and flowers. All this and more is provided for those who are most in need of refreshment, but are not able or disposed to make their wants known. It is the exhausted brain-worker, the tired mother, the invalids and the aged that are most benefitted by the quiet and beautiful parts of public recreation grounds, and too often it is this class that is least thought of by the advocates of the *all play* ground idea."

WARREN H. MANNING.

The last paragraph in Mr. Manning's letter is especially timely. In many cities the necessity for play-grounds for children has been wholly overlooked in arranging for small parks or gardens, and open spaces for general public accommodation. But the public which has now been awakened to this great want, is running wild over it, and the opposite extreme will be reached without such timely warning as Mr. Manning presents.

DOG'S-GRASS.—Mr. E. E. Bogue observes: "In answer to your question in regard to what plant is meant by 'Dog's Grass,' I beg leave to refer you to Chambers' Encyclopedia, Webster's Dictionary, Henderson's Handbook of Plants, or Gray's Manual, sixth edition. It is more frequently given as the 'Dog's-tail Grass;' but the author of the circular you had in hand, evidently cut off the caudal appendage from the name and left only the dog. He should, of course, have inserted the scientific name (*Eleusine indica*), and anyone would have known what plant was meant. Gray remarks that it received its generic name from the name of the town where Ceres, the goddess of harvests, was worshipped. If it is as troublesome a weed in all places as it has been in my experience, the price of the seed will never run very high. However, what is one man's salvation is another man's destruction. The plant is a native of southern Asia, and in this country is variously known as Crab-Grass, Yard-Grass, Dog's-tail Grass, Dog's Grass, Wire Grass, and, I think we may say, 'and so forth'."

Neither the *Eleusine Indica* nor *Cynosurus cristatus*, both of which go under the common name of Dog's-tail Grass, can be the plant in question. The catalogue referred to was evidently gotten up by one who had a trade in the warmer part of our continent, and the catalogue had reference to these southern orders. *Eleusine* is too common in these countries to be quoted as a rare and valuable grass on which quotations are too variable to be fixed; while the *Cynosurus* will hardly grow at all in a warm climate. The question is still open,—what is the "Dog Grass," so valuable in Mexican cultivation?

DEATH OF TREES BY SUNSTROKE.—During the late extraordinary warm spell, the writer of this paragraph was called upon to see a large Sugar Maple tree that was supposed to have been destroyed by a leak of the city gas main at the root; but an examination showed that the tree died, literally, from sunstroke. It is strange that close observers of trees are unable to see when anything is out of the common run of things, and consequently note that something is going wrong. This Sugar Maple had been planted on the street probably a quarter of a century ago, and was about four feet in circumference; but the trunk was almost triangular, and yet this peculiarity seemed to attract no attention. The tree was simply triangular because on three sides of the tree the bark and wood had evidently been destroyed years ago, while the outer bark still continued to cover up the injury, and the only live wood was on the angles of the trunk. Only about one third of the trunk was practically alive. When the exceedingly warm spell came, it was impossible for these limited ducts to supply the moisture required for such a large surface of foliage, and the tree, therefore, literally died from inability to furnish the moisture required for transpiration. It may be always taken for granted, that when the trunk of a tree, naturally cylindrical, takes an angular form, there is something wrong beneath the bark, and an examination should at once be made. The flatter portions will usually be found dead. In this case, the bark should wholly be cut away from the dead portion, and the denuded part painted, in order to check rotting away. In time, the healthy wood may grow over the wound or lifeless part, and the life of the tree be eventually saved.

NEW OR RARE PLANTS.

PINUS BANKSIANA.—The Banksiana Pine is one of the most beautiful of American Pines in regard to delicacy of foliage and habit. In some parts of this country, it has a dwarf, scraggy habit of growth, which is not pleasing; but in the Northwest, it will make a small tree, and it is when in this condition that it is referred to here. In the vicinity of Lake Superior, the writer has seen specimens of extreme beauty. Large tracts in that section are completely covered by this species, growing as thickly together as the well known White Cedar in certain parts of New Jersey. The Banksiana shows no beauty when in a dense mass like that, and it is probably from the fact that it is in this condition that lovers of coniferæ have usually seen it, and no attempt has been made to introduce it into our gardens. At least it may be supposed that it has not been introduced, from the fact that no catalogue, known to the writer, offers it for sale.

TEPHROSIA VIRGINIANA.—A Coatesville, Pa., correspondent says:—

"Please state, in MEEHANS' MONTHLY, what plant the flower is from which I send by this mail in small box. It looks just like a small sweet pea, but they grow in clusters on the ends of branches. Plant is a little over a foot high, and grows wild on south edge of woods, on north hill, of Chester Valley near here. It was in full sunshine on a dry bank."

This beautiful plant is *Tephrosia virginiana*, and has already been painted in the "Native Flowers and Ferns of the United States."

It usually grows in low levels, in dry sandy places, and it is unusual to find it in higher elevations on the borders of woods.

THE HARDY FLOWER GARDEN.

CELOSIAS AS BEDDING PLANTS.—So many plants grown under glass in the Old World come to us as pot plants, merely, that they are seldom tested in the open air. Yet many of

these supposed tender plants may be made to be among the brightest ornaments of our gardens. The common cockscomb is a grand illustration of this. It thrives grandly in the open air,—and a mass of them continues the whole of the summer to present a literal blaze of beauty. It is not generally understood that the cockscomb, *Celosia cristata*, is only slightly crested in its native condition, though it was often enough so to warrant Linnæus in giving it the name *cristata*. It is found more frequently growing in loose, panicled spikes, as prettily shown by an illustration which we have

taken, by permission, from the catalogue of Messrs. Vilmorin-Andrieux & Co. Though the huge crested forms, especially known as the cockscomb, finds more favor with flower growers than the loose, wild forms; to many people's minds, the feathery purple spikes of the latter are lovely,—and as they endure the heat of our summers so well, the plant deserves a good place in ornamental gardening. Many old fashioned flowers, such as Batchelors' buttons, Prince's feather, and various Amaranths, are near relatives of the *Celosia*.

THE MEXICAN COLUMBINE. — One of the pleasures of the cultivation of herbaceous plants is the large collections of various things which will produce a successional bloom over a long period of the summer season. There are probably few genera of plants which will do this with more pleasant results than the various species of columbine. The family relationship of the different species is so clear that few will mistake a columbine when they see it; but the different species are so closely related that botanists can scarcely mark out their distinctive characters;—but the cultivator can see great differences, and possibly in no particular respect are the differences more marked than in their time of flowering. The American Columbine, *Aquilegia Canadensis*, is possibly among the earliest to flower, and then different forms from the Old World follow. After this the mountain forms come in. The *Aquilegia Olympica* is an especially beautiful one, the white and the purple of the flower being so distinct, and can be seen in full bloom usually about the end of May. By the beginning of June the Mexican Columbine, *Aquilegia Skinneri*, comes in, and would perhaps be regarded as the most beautiful of the whole family. It is a very strong grower, and in the various shades of yellow and red, makes an attractive appearance. Then follows our yellow columbine of the Rocky Mountains, with its long, spreading spurs and bright yellow blossoms, extending the flower season of the family into early June. These scarcely begin to pass their best before the columbine of our northwest coast, *Aquilegia truncata*, follows, remaining in bloom until the end of July. This is a particularly beautiful species, the red being particularly rich. It is much brighter, in fact, in color, than the early flowering *Aquilegia Canadensis*. There are few families of plants which will afford so close a succession for fully one-half of the floral season.

THE ARMERIAS.—In Olden Times, the lovers of gardening bordered their flower beds with some one particular plant in the same manner as Box Edging is now employed, and even in these days such edgings are far from uncommon. The object is to get a close, stocky plant that will flower freely, and will require no trimming or dressing to keep in shape. Few better plants could be employed for this purpose than the forms of *Statice Armeria*, though some botanists take the specific name and make of it a distinct genus under the name of *Armeria*. The only popular name we ever heard for them was "Thrift." Why this is popularly so named, is questionable; but it makes a little, stocky mass of grass-like leaves about six inches in diameter, throwing up numerous leafless stalks from six to ten inches high with a head of purple flowers at the apex. Underneath the flowers is a portion of the calyx, which is extended downwards, embracing the stem, and which

the children call the "flower bracelets". Some of the flowers open among the earliest in the spring, and a succession is continuously produced until past midsummer. One of the species is found naturally in sandy places near sea-coasts, and is known as *Armeria maritima;* but like so many other plants found under natural conditions, it grows possibly better in ordinary garden soil, than in its native sandy wastes. There is another species called *Armeria plantaginaefolia*, which has somewhat broader leaves, and taller flower stems, and which continues later in bloom than the other species; but not quite so well adapted as the others for bordering purposes.

THE NOMENCLATURE OF VERONICAS.—There are few more handsome hardy herbaceous plants than the species of *Veronica*. But the distinctions between the species are so slight, that one is never sure whether he has the correct name. Receiving from what would be regarded as an authoritative source, a kind as *Veronica rupestris*, it proved to be *Veronica Teucrium*. A recent monograph of *Veronica* does not include *V. rupestris*. A correspondent who keeps the run of good herbaceous plants, furnishes the following note,—but it is not yet clear that *Veronica rupestris* is anything more than a garden name.

In the collection of the writer are numbers of supposed species, that are scarcely distinguishable from *V. Teucrium*.

"I find in catalogue of James Backhouse & Co., of York, England,—Alpine Plants '*Veronica rupestris*.' One of the handsomest rock plants, habit dwarf and free. Flowers bright blue.'

I also find it in catalogues of Pitcher & Manda, Short Hills, N, J.,—Shady Hill Nurseries, Boston, Mass., and Woolson & Co., Passaic, N.J. It is cited in a catalogue of Hardy Flowers, of Reading Nursery, Reading, Mass., as '*V. rupestris* (Rock Speedwell) Europe. Flowers like *V. cercæoides*, etc. Not in Robinson's 'Alpine Flowers' In Robinson's; 'The English Flower Garden,' Ed., 1893, p. 731, but not much about it. It is not in Nicholson's Dictionary under *V. rupestris*. It seems to be covered by *V. saxatilis*, yet I am not sure of the correspondence from my memory of the plant. The whole subject of *Veronica*, is worth a botanical study."

FRUITS AND VEGETABLES.

THE SMITH'S CIDER AND BALDWIN APPLES.—Apple growers in Pennsylvania still consider the Smith's and the Baldwin Apples two of their most productive varieties. There is scarcely a season that passes without these two bearing full crops,—neither of them are apples of first quality, from the point of view of a dessert table, but they are at least good enough when other varieties are scarce.

SUN-PRINTING FRUIT.—The rosy cheek of an apple is on the sunny side—the colorless apple grows in the leafy shade. Advantage may be taken of this to have a pleasant surprise for children. A piece of stiff paper placed around an apple in the full sun will shade it, and if the "Mary" or "Bobbie" is cut in the paper so that the sun can color the apple through these stencilled spaces, the little one can gather the apple for itself with the name printed on the fruit by Nature herself.

PLANTING STRAWBERRIES. — Strawberry plants fail to grow more frequently from being set too deeply, than from any other cause. The crown should always be above the surface of the ground. A dibble is better than a trowel for planting,—when the hole is made the long, fine roots should be placed in the hole, and the earth pressed very tightly about them. If there is danger of a dry time,—water may be put in the dibble hole, and allowed to soak away before the plant is set in.

CELERY CULTURE. It is well known that the celery plant delights in a rich and moist soil, and those who have the opportunity to use liquid manure in the cultivation of this plant have a great advantage over others. In addition to this, some cultivators who grow the celery for market are introducing water artificially, and find it to be a profitable practice. In Allegheny City, Western Pennsylvania, one grower has a supply pipe from one of the city water mains, so arranged that at the end where the flow commences, guano or some other artificial fertilizer can be placed in the water pipes. He can get double the crop from the same ground, as by the ordinary methods, and stalks that bring a much higher price in market.

BARRELING APPLES.—Many of the most profitable operations in commercial life depend in the first instance upon very simple facts. Most persons would pass by without observing the barreling of apples as a case in point. If apples were placed loosely in barrels, they would soon rot, though passing over but a very short distance of travel; and yet, when properly barreled, they can be sent thousands of miles,—even over the roughest ocean voyage, in perfect security. This is owing to a fact discovered years ago, without any one knowing particularly the reason, that an apple rotted from a bruise only when the skin was broken. An apple can be pressed so as to have indentations over its whole surface without any danger of rotting, providing the skin is not broken. In barreling apples, therefore, gentle pressure is exercised so that the fruit is fairly pressed into each other, and it is impossible for any one fruit to change its place in the barrel on its journey. Apples are sometimes taken out of the barrels with large indentations over their whole surface, and yet no sign of decay. In these modern times, we understand the reason. The atmosphere is full of microscopic germs which produce fermentation, and unless they can get an entrance into the fruit, rot cannot take place. A mere indentation without a rupture of the outer skin does not permit of the action of these microbes. This is a simple reason why the early observation enabled the barreling of apples to be so successful.

CULTIVATION OF CURRANTS.—A correspondent from Asheville, N. C., complains that the common red currant grows remarkably free and vigorous in a rich vegetable garden, and yet from twelve bushes scarcely gathers a couple of quarts of fruit; and the question is asked as to what can be the cause of such unfruitfulness. The currant is a native of northern climates, and usually desires a cool temperature; but the temperature ought to be just suited to the currant at Asheville, and it can scarcely be a question of temperature that the plants are so unproductive. It might be well to place them, however, in as cool and shady a position as possible; but care must be taken not to have the soil or situation too dry. Dry soils are usually warm. It might be noted that those who have observed the currant in its wild condition, have noticed how fond it is of growing among dead trees or rotten wood, and this hint might be profitable in regard to the culture of the currant. Rotten wood, generally, is rather injurious than otherwise to most plants, but the currant seems to be an exception, unless, perhaps, the raspberry might be included in the same list. Much of the fertility of the currant bush, however, depends upon the pruning. It is an art which cannot be well taught with the pen, but the experienced currant-grower could make the most unproductive currant very productive by judicious prunning.

THE SPITZENBERG APPLE.—The Spitzenberg apple always brings a better price per barrel than others, and the question was recently asked of the conductors why it was that, as this apple brought a higher price, more of them were not grown, and by thus well stocking the market with them, bring the price down. This is a question which could be answered only by those who grow this apple. Some say that the reason why it is grown at all is that it comes into market at a time when other varieties are scarce,—while others contend that the peculiar flavor, so grateful to most tastes, is what gives it more appreciation. It does seem that only orchardists can answer this question.

IMPROVEMENT OF THE JAPAN QUINCE.—The ordinary Japan Quince, *Cydonia Japonica*, which is almost entirely grown for ornament, has a much more agreeable odor than even the common quince has; but as a general thing it has been too small and too tough to put to culinary uses. Mr. William Parry, of Parry, N. J., has taken in hand the making of selections, with the hope of improving it; and it is said that he has one that prodnces fruit from nine to twelve inches in circumference. He has named it the Columbia.

STRAWBERRY, TENNESSEE PROLIFIC.—Strawberries are somewhat local in their tastes and habits. The Cleveland Nursery Company of Rio Vista, Virginia, claims that the Tennessee Prolific is one of the best for that region.

MARSHALL STRAWBERRY.—Mr. B. M. Watson, of Plymouth, Mass., considers this new variety as one of the largest and finest ever grown.

EARLY FALL PLANTING.—The following paragraph is going the rounds of the papers:

"Professor Bailey disapproves the practice of some nurserymen of stripping the leaves from nursery stock in order to stop growth and enable them to deliver trees in the early fall. He says this practice weakens the trees and causes many of them to fail in the orchard."

Professor Bailey has, no doubt, been misunderstood, and charged with sentiments he never entertained. Nurserymen do not dig trees in any event till the wood is mature, and when it can make no possible difference to the tree whether the leaves are taken off by the hand of Jack Frost or by the hand of man. And again an early transplanted tree makes new fibres which supply the branches with moisture, which a late planted tree does not. The loss by evaporation in a late planted tree is therefore much greater than in one planted in the fall early.

BARREN ENGLISH WALNUTS.—Mr. E. C. Williams, Chapman, Snyder Co., Pa., writes:

"Having in our orchard two large trees, nearly 30 feet high, well developed and branched, of English Walnut, we have not had in all these years since we grew them, a bushel of nuts from trees.

I have seen them growing and bearing abundantly when trees were not half the size that ours are; seen them all over France and Germany with abundance of nuts in the fall of the year.

Our soil is heavy loam with a slight mixture of limestone; the land lays at least 30 feet above the water level on the Pasqualana—we have tried everything to induce these trees to bear, but without result. Can you state cause, and and will you kindly inform us of the same, as we tried to introduce the growing of same for profit; but our own poor results have prevented us from doing so."

A few warm days in early spring will often cause the catkins or pollen-bearing flowers to advance and mature before the female or nut-bearing flowers are ready to receive it. Being unfertilized, they cannot bear. In the Old World, where spring does not come till it intends to stay, this difference in time does not occur. A single tree, or a few scattered trees, are more liable to suffer from want of pollination than a number of trees growing together, because no two trees flower at precisely the same time. In a group of trees, the late-flowering male blossoms furnish pollen to the female blossoms of the more susceptible, earlier-flowering trees. Most early-flowering kinds of trees are apt to suffer in this way, as male flowers, or even the anthers of hermaphrodite flowers, will mature under a warmer temperature than will induce growth in the pistillate or female organs of flowers. It is for this reason that the recommendation is often made to plant such trees on northern or western aspects, so that the pollen-bearing organs may not be unduly excited till spring has actually arrived. There is probably no remedy for such large trees as Mr. Williams describes. It would be some years before other trees, planted now, would have pollen. Perhaps some rapid-growing poplar trees, planted so as to shade from early spring sun, might be of benefit in a few years.

BEURRE CLAIRGEAU PEAR.—Among the higher classes of fruits, as well as among strawberries and other small fruits, there are changes in popularity from one variety to another, often without any apparent reason; while there are some that continue in popular favor for a long time. Among pears, one of the comparatively old varieties, known as Beurre Clairgeau, is still in as much demand to-day as it ever was, and is one of the standard winter pears. Its large size has recommended it, as well as good color and comparatively high flavor.

A NEW WATER MELON.—The daily papers have learned articles on a water melon, which a grower in Georgia has a plant of, producing melons without seeds. It is regarded as a great discovery, the parent of a new race, ridding us of the trouble of picking out seeds. We can be congratulated on the chance to gulp the mouthful. It will be welcomed by the "20-minutes-for-dinner" traveler. But none of the editorials tell us where we are to get the seeds for planting of this seedless water melon.

KOONCE PEAR.—Mr. Wm. Parry, of Parry, New Jersey, is introducing this as a remarkably early pear. Usually, early pears are small. This is as large as a Bartlett, and with a pretty ruddy tint.

BIOGRAPHY AND LITERATURE.

BELOVED COMPANY.

A Book of Verses underneath the bough,
A Jug of Wine, a Loaf of Bread—and Thou
Beside me singing in the Wilderness—
Oh! Wilderness were Paradise enow!
—*From the Persian of Omar Khayyam.*

THE LATE JOHN H. REDFIED.—A correspondent who met this lamented botanist during his explorations on Mount Desert Island every summer has this pleasant sketch of the amiable gentleman:

"At Mount Desert I saw him in the field; knew him in the out-of-door side of his nature. Every hour showed me something new in him to love and admire, whether it were his love for the beautiful, his poetic as well as his scientific botanical spirit, or his appreciation of all that was fit and seemly. I remember once being somewhat astonished to see him take off his hat and bow to a huge tree stump. When I asked for an explanation, he remarked that he always did so whenever he passed that way, for the tree must have been such a king among trees. No one can forget his spare figure, the little gray hat and the kindly face beneath it, passing actively along the roads, over the hills, kneeling beside the path in examination of the plants he loved so well, the worn portfolio, and the arborvitae staff that were such constant companions.

It was his custom to ascend Barr Hill at Seal Harbor alone each year before he left Mount Desert, on the very morning of his departure. No one can dare imagine how beautiful and touching must have been his thoughts as he looked over the island he loved so well. The morning of his departure last September (September 24) was a perfect day—no day was ever fairer. As usual he went to the summit of the hill alone, and looked over land and sea, as it proved for the last time in his bodily presence. I met him as he came down, and shall ever remember the expression of great peace and happiness that shone from his face. He may have known all."

If Mr. Redfield had, at that time, any presentiment as suggested, it must have vanished subsequently, as but a short time before his death he was looking forward to a pleasant time the coming summer in looking over the Island for plants possibly missed in the "Flora" lately published by Rand and Redfield. It was his habit to finish every task, day by day, as if he might never take it up again, and this might lead to an appearance of presentiment.

THE USE OF THE WORD "CULTIVATED."—A good correspondent, while sending an admirable, practical note for the magazine, observes.—

"If you think proper, substitute for *cultivated*—as applied to plants—the intransitive verb and its participles *grow*, *grown*, etc., if you think it permissable in a journal of the literary standing of MEEHANS' MONTHLY.

"By the way, is this use of the word allowable? Plants grow, grew, are growing, have grown; but the power *to grow* is innate, and is limited to the individual. Might we not as logically say that we grow horses, cattle and sheep? But perhaps the word as a technical term is allowable, as we also speak of *flowering* a plant, which is more concise than saying, *causing it to bloom*. It is only another illustration of *English as she is spoke*.

"I enjoy MEEHAN'S MONTHLY very much, and wish it success. It is the literary monthly of horticultural journalism, and supplies a link between the purely trade paper and the super-scientific journal."

It is proper to use the word "grow" as suggested. Custom is the only law in language; and the use of a word by any well-known author stamps it as usable in the sense he employs it, for all time to come. There are orchid-growers' manuals, and wool-growers' conventions, with other good and sufficient authorities for "plant-growing." The compliment to the work of MEEHAN'S MONTHLY is particularly appreciated. It is the reputation aimed at by its publishers.

THE DERIVATION OF SAXIFRAGE.—An instance of the way in which plant names often get confounded occurs in a work on "Myths," by an American author. He says: "The ancient Romans had their rock-breaking plant called *Saxifraga* or 'sassafras.'"

Saxifraga is derived from two Latin words, *saxum*, rock, and *frangere*, to break, from the supposed power of the plant when growing in the crevices of rocks to split them asunder. But "Sassafras" is not *Saxifraga* (Saxifrage). Although the word "Sassafras" may have been derived from the word *Saxifraga*, the two words are now used to designate two very different genera of plants; and to use them as this author has, leaves an impression on the mind of the reader, unless he be a botanist, that the Sassafras is the plant to which the ancient Romans attributed the power of rock-breaking, which is not the case.

Greenport, N. Y. F. N. TILLINGHAST.

The derivation of ancient names is usually the work of shrewd guessing, and sometimes of guessing by no means shrewd. In the writer's researches in connection with the wild flower chapters, he found that the ancients named plants more in connection with their supposed medical or other properties, and he would be more disposed to believe that a plant was called Saxifrage from a supposed power to break up the stone or the gravel, than from breaking up rocks on which it grew. An analagous case is that of Sedum. Even so broad a scholar as Dr. Gray would tell us that it was given to the plant from its seeming to sit on rocks, and he accents it accordingly as Sé dum. But the writer found it was not derived from the Latin *sedo*, to sit; but *sedeo*, to assuage, from the use of the leaves of some of the species in assuaging the pain of burns or scalds. The pronunciation is therefore Sed'um. It is in this line we have to look for the derivation of ancient names.

EASTER LILIES.—As often noted in MEEHANS' MONTHLY, there is no objection whatever to common or English names to flowers. No one would think half so much of pansies or sweet williams if they always went by their botanical names; but one inconvenience is that the names are so readily changed from one thing to another, that it is difficult sometimes to know what the other party is talking or writing about. For many years, the calla has been known as "Easter lily," and it is questionable whether, if an order were sent to some distant florist for Easter lilies, the one who ordered would not receive the *Calla Æthiopica*. Recently a form of the Japan *Lilium longiflorum*, known as the variety *Harrisii*, which is grown in Bermuda, has received the name of Easter lily, and considerable confusion arises therefrom. For a while it was known as the Bermuda lily. It is, however, one of the most popular plants for Easter decorations. For several pears past, there has been a large trade in the bulbs from Bermuda to the United States; but during the present year, successful efforts have been made to introduce the cut flowers, and, it is said, with considerable success. Many thousands were received from Bermuda during Easter week, and distributed to many florists in various parts of the Union. In New York, they were sold as low as $2.50 for a box of five dozen. In Philadelphia they brought about $3.00. Some of these were successfully carried to Nebraska, Colorado and many of those far western States, where they were sold for $5.00 a box. Notwithstanding these low figures, it is stated that the venture was a commercial success.

VARIATION.—Prof. L. H. Bailey, of Cornell University, Ithaca, N. Y., is about to make a special study of Bud-variation, and anyone having knowledge of such sports, will do good service to horticultural science by reporting them to the Professor. The nectarine is one of these sports, and came, by this method of bud-variation into existence; and the case where new varieties originated in this way are well known among bouvardias, roses, carnations and other plants.

DANIEL C. EATON.—The severe losses American botany has suffered the past year has another addition in the death of the eminent Professor of Yale, Daniel Cody Eaton, which occurred on the 29th of June. He was especially an authority on the difficult genus *Aster*, and his superb work on the Ferns of the United States will long remain a monument of fame. He was one of the most genial of men. As a teacher of Botany in the college he was very successful. A goodly number of the younger race of botanists owe much to him.

GENERAL NOTES.

HORTICULTURAL INVESTIGATION.—The State of New York has placed $16,000 in the hands of Professor L. H. Bailey for investigations in the diseases of plants.

A SHORTIA SCHOOL.—A few years since, when the pretty Shortia, which had not been known since Michaux's time, was re-discovered in some abundance, many northern purchases of plants were made. From the proceeds of these sales, a school in North Carolina was established, which goes under the name of the Shortia School.

GOVERNMENT SEEDS.—"Why don't the Secretary take his share, as his predecessors have done, and let the thing go along? Why not have added book reports, and all the rest of it? Don't it all help to keep up the National debt?" says James Stewart; and this would doubtless be echoed by the man who pronounced a "National debt a national blessing," especially as he had the money to lend.

A LARGE ELM TREE.—Curiosity has been aroused as to the largest specimen of any of our forest trees, so far as known. Among elms this eminence is claimed,—one in Portland, Connecticut, standing near St. John's Chapel, a mile from Gildersleeve, which is twenty-two feet in circumference; but one is reported from Ledyard on the "Larrabee Farm," which is twenty-four feet, and the spreading branches cover half an acre.

THE PEARY EXPEDITION.—It was arranged, when Lieutenant Peary decided to remain in Greenland another year, that a vessel should be sent to bring him home this Autumn. The collecting of money for this has been mainly the work of Mrs. Peary. A few weeks ago the same vessel that was used on former expeditions, the "Kite," started for the purpose. Again a Philadelphian, this time Mr. R. Lé Boutilier, volunteers as botanist and naturalist in general to the expedition.

GINGER ALE.—Everyone who has taste or a weakness for ginger ale well knows the difference between the native and the imported article. It is said that the reason for the difference is that in the Old World apples are used instead of lemons. The apples are roughly sliced to boil in water, and made into a paste, with a small quantity of ginger. In the Old World, where great economy has to be practiced in order to make many matters of business profitable, wind-fall apples are used—about one pound of apples is used to a gallon of liquid. Other fruits which contain tartaric or carbonic acid are used, and found to do just as well as citric.

COMMENDATIONS OF MEEHANS' MONTHLY.—It is extremely gratifying to the Publishers, to find the high appreciation expressed for the magazine, in intelligent quarters everywhere. The plates and descriptions of our native flowers, it is believed, have never been excelled by any similar attempt anywhere; and though the high character of the work will never produce the remuneration to the Publishers which so many productions do that come down to the people instead of aiming to elevate them, usually return to their proprietors, it will always be a satisfaction to the Publishers to feel that the intelligent and best people everywhere appreciate the work the magazine is doing.

PRIORITY IN PLANT NAMES.—"What you have said about correcting erroneous orthography in plant names seems sound. If we are not to correct a slip of the pen in writing *Ailanthus*, when the gender *glandulosa* and the derivation 'ailanto,—tree of heaven.' given clearly show that the describer intended *Ailantus*;—and if we must write *Scoria*, because a proof-reader could not make out Rafniesque's manuscript Hicoria, we shall have a pretty list of names to correct in our herbariums. We shall have to change the monster cactus of New Mexico from *Cereus giganteus* to *Cereus gigantens*, for this is the orthography in Engelmann's original publication." R.

TRICHOSTEMMA DICHOTOMA.

BLUE CURLS.

NATURAL ORDER, LABIATÆ.

TRICHOSTEMMA DICHOTOMA, Linnaeus.—Stem six to twelve inches high, bushy, brachiately branched, clothed with a short cinereous roughish pubescence; leaves one to two inches long, lance oblong, or rhombic-lanceolate, rather obtuse, petiolate, the petiole, one-quarter to half an inch in length; flowers solitary, on peduncles one-quarter to half an inch long, in the axils of the leaf-like bracts, the terminal ones di-or tri-chotomous; bracts lanceolate, shorter than the peduncles; corolla bright blue, rarely purplish (Darlington's *Flora Cestrica*. See also Gray's *Manual of the Botany of the Northern United States*. Chapman's *Flora of the Southern United States*, and Wood's *Class-Book of Botany*.)

The critical student of botany, if investigating the history of this plant, would find many leading authors differing in opinion as to the derivation and consequent orthography, as well as in the gender and therefore the spelling, of its specific name. Of course, the student knows that the specific name stands in relation to the generic as an adjective does to a noun, and in the Latin language the adjective must agree with the noun in gender. Now many Latin nouns ending in *a* are feminine, and taking *Trichostema* as of this gender, the specific name would be *dichotoma*. It was thus written by Linnaeus in his earlier works. But in this case *Trichostema* is of the neuter gender, and thus requires the neuter form of the adjective *dichotomum*. Linnaeus corrects his early mistake in his later works; but still we often find the incorrect form in use to this day. In Decandolle's "Prodromus," the name is written *Trichostemma*, and Buek, in his "Index" to Decandolle, says it was done to "correct Gronovius' name *Trichostema*," Gronovius being the real author of the name, and not Linnaeus as usually quoted.

Trichostema means hair-like stamens, while *Trichostemma* should be derived from hair-like crown. Turning to Gronovius,' "Flora Virginica," we find he was very much impressed with the peculiar stamens. (See Fig. 2.) In the original Latin, it reads *Staminibus setaceis longissimus*. So it is not difficult to decide that he had these hair-like stamens in view when he coined the name, and that Decandolle's "correction" was in this instance incorrect. It is well to take occasion as these instances offer to show the general student how much may depend in botany on a seemingly superfluous letter in a name.

In like manner, there are differences of opinion about the common name. The original common name appears to have been Bastard Pennyroyal. Modern botanists give as the common name "Blue Curls." This is a much prettier and more appropriate name; but perhaps it is a name suggested by some botanists for this species, and, though an English one is not yet common as a name. Again some botanists give the name "Blue Curls" to the whole genus, and describe this one as the "Common Blue-Curl." It has not been the practice with authors to be very particular as to what is right or wrong in the adoption of common names; and much therefore must be left to the reader to choose what he likes for himself.

Of its further botanical history, it may be noted that Plukenet, a learned English author, who wrote in 1691, gives a drawing of it, and calls it "a *Scutellaria* from Virginia;" but says little more of it than that its common name is "Tothemochitl in New Spain." Ray, an author who followed Plukenet in 1704, describes it as "a blue *Scutellaria*, with the leaves like marjoram,—from D. Banister's catalogue." So it would seem that to this early collector the credit falls in this, as in so many other cases, of being the first to make the plant known to the botanists of the Old World. This reference of the plant to *Scutellaria*, by the older botanists, is another illustration of the progress in the knowledge of the true relationships of plants, which have been made since their day. Now our plant would be associated with *Teucrium* rather than with *Scutellaria*, for this last named genus has the upper lip projected upwards, much as *Stachys* has; while, as we see at Fig.

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INTENTIONAL SECOND EXPOSURE

2, all the divisions of the corolla have a more or less downward tendency as compared with the stamens. For this, among other characters, *Trichostema* would be referred to the section of Labiates, known as *Ajugeæ*, while *Scutellaria* will be found in *Stachydeæ*.

In connection with the botanical characters of this plant, there is one of great value to us in this chapter as affording a lesson not often taught in botanical works, in relation to the peculiarities of plant growth. Plants do not grow in one continuous ratio, but by a series of advances and rests,—or, as we say, growth is rhythmical. This can be observed better in the inflorescence than in any other parts of plants. The peduncle, for instance, may elongate, and while this is proceeding, the parts of the flower already formed, will remain without any advance till the elongation has reached its limits. By that time some of the floral parts that have been resting, may again grow, and as these rest some others advance. Very often the peduncle will not proceed again after resting; but not unfrequently it moves on again to greater lengths after the petals have fallen, and generally moves to some other position if it does not actually elongate. Each species has its own peculiarity, but it is seldom that there is not rhythmical motion of some sort, in a growing flower. In the case of our present plant one of the most interesting features of this motion is in the twist which the peduncle makes after the corolla has fallen, by which the part of the calyx which was the lower becomes the uppermost. As we know, in most Labiate plants there are two upper divisions and three lower to the calyx. In this plant, after the twist has taken place, the three segments seem at the top, while the part with two is beneath.

As a general rule, we have to believe that the various forms of flowers have a two-fold object. One is evidently merely to give variety to vegetation, so that each after its kind may be readily distinguished from its neighbor. Beyond this there is generally some special use to the individual in the peculiarity of its form. In a large number of cases, flowers are so arranged that it is difficult for the plant to receive its own pollen; while it is rendered easier for it to receive it by the aid of an insect from some other flower.

Trichostema is believed to be of this latter class. A correspondent of Foote's *Leisure Hour*, S. T. Isaman, referring to a Californian species, says: "The tube of the corolla is bent upon itself, when in its normal condition. On inserting a pin or small splint, the tube is straightened, and the stamens and pistil are thrown forward and strike very forcibly on the back of any intruding insect. I have watched bees for hours, gathering honey from these plants, and have been very much amazed by the performance." As the structure of our species is similar, it may have a similar behavior. Of course the bee would carry pollen on its back, and when entering another flower, this pollen would be communicated to the exserted stigmas.

As an element in wild scenery, it is one of our most valuable plants. It endures the heat in its places of growth, not because it can resist evaporation as succulents do, but because it sends its long but slender root deep down into the earth. One plant, but six inches high, was found, by careful tracing, to have a root two feet in length.

Aside from its beauty, what is its use? Our medical books say nothing about it, nor do we know of anything that it has contributed to any of the arts.

But after all it may have its uses, says Tennyson:

"So Lady Flora, take my lay,
And if you find no moral there,
Go look in any glass and say,
What moral is in being fair
O, to what uses shall we put
The wildweed-flower that simply blows?
And is there any moral shut
Within the bosom of the rose?

But any man that walks the mead,
In bud or blade, a bloom may find,
According as his humors lead,
A meaning suited to his mind.
And liberal applications lie
In Art like Nature, dearest friend;
So 'twere to cramp its use, if I
Should work it to some useful end."

To be sure our pretty "wildweed-flower" simply blows; but the lesson it teaches of perseverence through the dryest obstacles, in order to do this successfully and well, is a lesson of usefulness not to be thrown away.

It is found flowering in August, through most of the Atlantic portion of the United States.

EXPLANATIONS OF THE PLATE.—1. A plant from a railroad bank near Philadelphia. 2. Side view showing the slender exerted stamens. 3. Full face view of a flower, showing the arrangement of the divisions of the corolla, with the stamens projecting upwards.

WILD FLOWERS AND NATURE.

THE MOUNTAIN STREAM.

"Cold and clear from the mountain-wells,
Mirroring brightly the green arcades,
Shattered to foam in the mossy dells,
Then gliding again through the silent shades,
The immemorial mountain-stream
With murmur sweet to its kindred calls,
And hastes to the river with distant gleam
And fills the forest with waterfalls."

—HOWARD WORCESTER GILBERT.

VITALITY OF SEEDS.—Dr. I. A. Bachman, Augusta, Ga., writes:

"Kindly name the enclosed samples, marked A and B, and give an explanation of their origin in oats, based on the following particulars:

Last October a tract of fertile, river-bottom land, of about 75 acres, which had been in alfalfa for six consecutive years, was sown in oats; in February the intense cold killed most of the winter oats here, excepting, apparently, this particular lot, which seemed to have stood the freeze better. They were well cared for, harrowed and top dressed, and altogether the outlook for a fine crop of oats was very good, until they started to head out, when it was observed that 75 to 90 per cent. of the growth was that of the enclosed sample, of which the proportion was about ten A to one B.

The questions that arise in my mind are: Was the original seed of the cheat in the ground before the oats were sown? Could the seed have lain dormant six years, without exhibiting itself to some extent, for example, after the freeze of March, 1895, which killed the alfalfa close to the ground, requiring sometime to recover itself.

The seed oats used were the product of that farm, and had been used over and over again for many years without the introduction of foreign seed. Could it be possible that the seed could have so degenerated that in ordinary circumstances (I mean without the intervention of a freeze) the product would have been the same as stated."

The specimens were of the common Darnel and Cheat grasses, which have so often tempted farmers to believe that wheat or oats could be transmuted into these species. Transmutation is, of course, wholly out of the question, but the farmer has rarely been satisfied as to how the intruding plants get there. There are two methods by which the occurence could be accounted for. When plants are starved, the growth is very much arrested. Darnel and cheat, when crowded by the taller growing wheat or oats, might reach an inch or less only in height, and yet produce perfect seeds. This has often been proved. In such cases they would be overlooked, and the cultivator pardoned for believing that no plants were there. If the wheat or oats are killed, these minute plants would grow into observation. In many cases they were probably growing in this condition unobserved. But aside from this, seeds will retain their vitality in the earth for an indefinite number of years, when deep enough to be protected from atmospheric influences. Many of the supposed facts to sustain this view are not attested by such strong evidence as true science requires—but there is incontestable evidence of the right sort, that when deep enough in the earth, the vitality of seeds will be retained for many years. Even under the eye of the writer, while penning these lines, is a solitary specimen of a Kansas plant, *Euphorbia hexagona*, from seed which is known to have been fifteen years in the ground. The spot where the original plants grew was covered with cellar dirt at that time. Deep digging this spring brought the seed to the surface.

THE POPPY FAMILY IN WASHINGTON.—Mrs. Susan Tucker, of Cheney, Wash., says:

"By the June number of MEEHANS' MONTHLY, I learn that I did not make myself understood when I corrected a mistake made in a previous number. What I meant to say was that I have found *no* plants belonging to the Poppy family *in this state*.

"On Uncle Sam Mountain, Lake County, Cal., I found *Meconopsis heterophylla*, etc."

WILD BUTTERCUPS OF MICHIGAN.—Those remaining constantly in one locality are apt to think that their peculiar flora and fauna exist everywhere. I was surprised to meet a competent botanist from Indiana who had never met with the spicy wintergreen *Gaultheria procumbens*, one of the most common plants of Michigan, covering thousands of acres, and highly appreciated for its beautiful coral-red, berry-like fruits and spicy leaves, though those familiar with both are apt to prefer the beautiful white fruit of the white wintergreen (*Chiogenes hispidula*), abundant here in swamps, as it has an acid flavor with the same spiciness. So in glancing over the MEEHANS' MONTHLY for June, 1892, page 86, I notice the statement that the wild buttercup of Pennsylvania, Maryland and New Jersey, is chiefly, if not wholly, *Ranunculus bulbosus*; but in North New Jersey and most of the eastern states, *Ranunculus acris* prevails. So far as I know *Ranunculus bulbosus* is only found in two places in the Upper Peninsula of Michigan, and not in the Lower Peninsula, while *Ranunculus acris*, single-flowered, wild variety, is a new introduction in Michigan.

Fifteen or sixteen species of *Ranunculus* are found in Michigan, all yellow-flowered but two, *R. circinatus* and *R. aquatilis* var. *tricophyllus*, the former most abundant. On dry lands and hills *R. fascicularis* prevails in the south-eastern portion of the state. It is only 3 to 6 inches high; but has flowers of much beauty, often double when wild, and well deserves cultivation. Needs very dry soil. *R. septentrionalis* in its many forms prevails in most places, and is also handsome, but, unlike *R. acris*, of a sprawling habit.

There is also a species or variety of *R. septentrionalis*, as some claim, (I must consider it a distinct species) that grows in lowlands by streams, etc. It is very rank in growth, with very large leaves, and sends out many thick, cord-like runners, 5 to 10 feet long, and has very large yellow flowers in June; while *R. septentrionalis* flowers in May. I feel sure two species are confounded. Its heads of acheniums are twice larger than those of R. *septentrionalis*. It is without doubt a pure native. It would be fine, in cultivation, to cover a moist slope. It does not seem to be *R. repens*, as *R. repens* grows at Pontiac, Mich., naturalized. *R. multifidus*, the Yellow Water Crowfoot, or Buttercup, probably is the handsomest species here, It has flowers nearly 1½ inches in diameter, and sometimes full double, while its finely divided shining leaves are very pretty.—Aquatic.

Our other species of *Ranunculus* are either very rare or lack in beauty. They are *R. Cymbalaria*, Pursh, *R. ambigens*, Watson, two varieties of *R. flammula*, *L.*, *R. rhomboideus*, Goldie, two varieties of *R. abortivus*, L., *R. sceleratus*, *L.*, *R. recurvatus*, Poir, *R. Pennsylvanicus*, L. f. Only eight species of *Ranunculus* are found throughout the state. Five or six species have handsome flowers, but *R. multifidus* and *R. fascicularis* are the handsomest, although entirely opposite in habits, as one perfers the water while the other prefers the dryest hills.

WILFRED A. BROTHERTON,

Rochester, Mich.

INFLUENCE OF CLIMATE ON FOLIAGE.—Professor Strasburger is one of those eminent European botanists to whom students in plant life have looked up to as among their greatest teachers, and it is therefore with some surprise that Americans read a recent paper of his in connection with the influence of climate on the structure of leaves. He takes, for an illustration, the European Beech. He says that when the beech produces its leaves in the deep shade of the forest, they are larger and finer than the leaves of the same tree exposed to full sunlight, and from this he deduces a general principle that abundance of sunlight to a dry atmosphere is the reason why leaves are thick and small. Yet it has been for over a quarter of a century placed on record, and admitted as an undeniable fact, that in the case of allied species of European and American trees, the leaves of the American are larger and thinner than the leaves of the European. The American Linden has larger and thinner leaves than the European Linden. So has the American Sweet Chestnut, American Oak, American Ash, American Buttonwood or Sycamore, and, in fact, all American trees that have close European allies. And yet no one will contend for a moment that the English climate is dryer, or that there is more light or more long continued sunlight in England than America. It is unfortunate when great authorities like Strasburger attempt to found great scientific truths on such slender materials.

THE MASSACHUSETTS HILLS.—When the great Roman Conqueror declared *nihil nisi labore*—without labor nothing comes—he was only reiterating the older sentence that man shall earn his bread by the sweat of his brow. After all, labor is more of a blessing than a curse. The rocky hills of Massachusetts require great labor to prepare for a crop of fruit or grain. But this very labor resulted in producing a hardy race of men of whom the whole Union is proud. Mr. Warren H. Manning has kindly sent to us a photograph of one of these craggy hils, which is in one of the Reservations, which we reproduce here as illustrating this characteristic feature of the noble State.

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THE OREGON GRAPE.—Mr. F. Huot sends a specimen from Pine Ridge, Neb., of what is there called the Oregon Grape. It is *Mahonia repens*. The true Oregon Grape is *Mahonia aquifolia*. Botanists do not regard them as distinct, and use *M. repens* as a synonym. Horticulturists, however, have to keep them separate, and consequently to keep up both names. In Oregon and further north—even to Alaska—*Mahonia aquifolia* grows sometimes four feet high, forming underbrush so thick that a man can scarcely get through; but the one from Nebraska, *M. repens*, seldom exceeds a foot in height, and creeps underground considerably. Our correspondent also sends specimens of *Calochortus Nuttalliana*, the beautiful Mariposa Lily of that section. Both of these species are representatives of the Flora of the Pacific coast, and Pine Ridge is probably the eastern limit of these two species.

AN EARLY BUTTERCUP.—Mrs. Susan Tucker, of Cheney, Washington, says that *Ranunculus glaberrimus* is the earliest buttercup of that section. Flowers here and there might have been gathered as early as February 14th, though the winter in Spokane County has been unusually mild.

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INTENTIONAL SECOND EXPOSURE

AN ANDROGYNOUS PINE.—Dr. J. H. Mellichamp sends, from Bluffton, S. C., one of the most remarkable departures from the normal form that has probably ever been noted in the pine family. The species is the one named by Dr. Engelmann, *Pinus Elliotti*, but which is now considered the same as the older named one, *Pinus Cubensis*. The male flowers of this pine usually appear in clusters at the ends of the branches. In this case, the lower portion of these male catkins is composed of female flowers. Just as in some portions of *Carex*, or common sedge grasses, the lower portion of the spike will be female, and the upper portion male. The appearance is very pretty, the lower portion being composed of scales, as in a very young cone, and the upper portion consisting of the staminate scales. It is come to be a belief, that through the whole vegetable kingdom, it is extremely difficult to draw the line anywhere, as one organ is continually found to be running into or taking the place of some other organ; but, so far as recorded, no case has been before brought to the attention of the scientific world, where a male catkin had taken on this bi-sexual character.

JUMPING SEEDS.—"Along every little brook in Eastern Pennsylvania, in autumn days," says Mr. E. Newlin Williams, "the pods of the jewel-weed are ripening. Each valve of the pod has an inwardly-exerted elasticity, which increases with age, so that at a certain point, which happens to be when the seed is fully ripe, the force exerted overcomes the cohesion of the valves, and from that instant valves and seeds may be searched for in vain by mortal eyes. It is fascinating to stand by the plant, to touch the primed pods, and see them go off; or, better, see the end of the stem from whence they disappeared, for they vanish with a startling abruptness if fully ripe. The plant is well-named Impatiens, or touch-me-not. Another of this explosive class is our witch-hazel. We have often seen mouth-like pods with their jaws locked as though in gaping surprise at the sudden departure of the long, white-tipped, black seed. They must be cooped up if you wish to catch the seed, for they fly out with some force. Thoreau speaks of having them in his room at night, and hearing the seeds drop out upon the floor from the catapult jaws of this natural pop-gun."

FORMATION OF GLACIERS.—The present condition of the earth, and, indeed, the fertility of soils, owe much to the existence, in early times, of immense glaciers,—that is to say creeping rivers of ice—which covered many parts of the Northern Hemisphere, grinding up the rocks, and making deposits of rich earth in which to grow our farm and garden crops; but the manner in which these glaciers are formed is still a matter of speculation. The accepted theory seems to be that the glacial ice is nothing more than closely compacted snow; but no one has ever been able to make ice out of snow by any amount of pressure that can be artifically applied, and those who have had the opportunity of closely inspecting glaciers, as they now exist, can readily see the difference between snow which has been pressed severely by the passage of a glacier through a narrow pass, and the clear blue ice which forms the great block of the glacier itself. It has come to be a maxim in general natural history, that the same laws which prevail in cases of great magnitude are nothing more than what we may see every day, on a small scale; and there is no reason why those who are in districts of abundance of snow and ice, might not for themselves work out actual experience of these small operations. These suggestions occured on reading the annual report of the Geologist of the State Survey of New Jersey, for 1893. The speculations in regard to the formation of the ancient glaciers that covered portions of New Jersey are very ingenious and interesting, and those desiring to pursue the subject intelligently could do no better than study this valuable report. Presumably, it can be obtained on simply asking for it from the office of Professor John C. Smock, State Geologist, Trenton, N. J.

CORDYCEPS TAYLORI.—At page 45, in the number for March, 1895, there is an illustrated chapter on fungi that grow out of caterpillars. A remarkable one from Australia is figured as *Cordyceps Berkeleyi*. The conductors accidentally noted, recently, that a portion of this name had been omitted.

Will the reader kindly correct, by writing under the picture, *Cordyceps Taylori*, of Berkeley, instead of *Cordyceps Berkeleyi?* These occasional slips are annoying.

GENERAL GARDENING.

AUTUMN.

'Tis golden Autumn, and a somber haze
Envelops all the dreamy countryside;
Soon o'er the world will sweep a crimson tide
Of fairy fire and set the woods ablaze
With sullen splendor. By the dusty ways
The golden rod is drooping, and beside
The wall the grapes are swelling in their pride
Of purple lusciousness. The drowsy days
Are almost silent, save where orchard trees
Are dropping down their ripe and ruddy store,
Or where the farmer beats the threshing floor
With rhythmic flail. Sweet nature's symbols these,
That mark the evening of the dying year
And prelude the approach of winter drear.

—J. RUSSELL HAYES,
in *Friends' Intelligencer*.

COUCH GRASS.—In a recent issue I note a wish to know what "Dog's grass" is. It is properly written Dog-grass, and does fluctuate in value. Its proper name is *Triticum repens*, and is sometimes called "Couch grass"—it is used in medicine. I enclose you a sample,—the way it comes to market. The genus *Triticum* is divided into two groups, one composed of annual plants, of which wheat is the type; and the other perennials, lead by the officinal species.

T. repens—originally a native of Europe,—now abounds in meadows and cultivated fields in the United States, where it is found very troublesome as a weed. It is specifically characterized by its creeping rootstock, by its awns being absent or not more than half the length of the flower, and by its rough, flat leaves. (United States Dispensatory—Wood, Remington & Sadtler.)

I don't know that it is ever gathered for market in this country, but am under the impression that the entire marketable product comes from Germany. A. ROBINSON MCILVAINE.

The original inquiry was for "dog-grass" merely. It arose from a correspondent sending us a Mexican catalogue of grass seeds, in which all the seeds were priced except one, and which read "Dog-grass seed being so exceedingly variable in price is not quotable." It is doubtful whether couch grass, the crested dog-tail grass, or any that have been mentioned, is the "dog-grass" of Mexican agriculture. There must be a good demand for it in Mexico, and it must be difficult to obtain, or there would be no difficulty in making quotations.

THE ELM-LEAF BEETLE.—What is to be done with the ravages of caterpillars in public squares and parks is a great question,—and not only for city trees, but for trees on private grounds. The Elm-leaf Beetle, for instance, has been very troublesome everywhere this year, skeletonizing the leaves to an extent scarcely experienced in other years. When those who suffer ask for a remedy, they are told they must spray the trees with water in which Paris Green has been dissolved, or else with a kerosene emulsion; but it is not easy to do this with large trees, and if even the trees are not too large to be assisted in this way, and we destroy the crop of beetles or of caterpillars, a new crop will come next year from some neighbor's tree. Unless everyone combined to act at the same time, it is almost impossible to expect much relief from this great scourge. Perhaps in cities and in public grounds, where expense is not so much of an object as the absolute preservation of the tree, spraying might be done. It would have to be done, however, every year, and several times a year. Such trees would certainly be protected, and perhaps they ought to be. If this course is to be practiced, however, it has to be done very early in the season, either while the beetles are feeding or else while the young caterpillars which follow the beetle are eating the leaves. It was amazing, recently, to see a party spraying a tree all skeletonized on which not an insect was to be seen, they having gone from the tree to some shelter to undergo their transformation, so as to be ready for the beetle stage next season. This party will probably report that the spraying system is worthless. It does not do to trust to the birds, although they do much in the way of keeping down insects of this character.

PEACH YELLOWS.—A correspondent inquires whether it is possible to cure a peach tree afflicted with the disease known as the "yellows". It is scarcely possible that an infested tree can ever be cured, and the only advice anyone can give to the owner of the peach tree, so afflicted, is to dig it up and throw it away. The disease is produced by a very vicious species of the mushroom family, known botanically as *Agaricus melleus*. This fungus commences its work at the roots of the tree, and the whole mass of roots will be covered by the cobwebby mycelium, or, as it is popularly called, spawn, before it is noticed, and the fermentation produced by its work will ruin the whole tree before any one has any knowledge of its existence. A year after the attack, its presence is made known by numbers of small sprouts, which come out from the main trunk, and usually with somewhat deformed leaves. Before the year is over these sprouts will come out at many places along the main trunk. It is rarely that this sprouting condition extends through the whole tree the first year. These sprouts being deficient in vital power, get winter killed, and the tree will therefore show, the next spring, a large number of dead twigs. If the tree is comparatively large it may take three years before the whole tree becomes infested with this fermentation. This particular fungus is very partial to dead wood; but it will leave the dead wood for living roots when it gets an opportunity,—and it seems to be especially fond of trees which have a gummy character. It attacks many spruces and pines with as much virulence as it does the peach, with the result of producing the same yellow tint that follows the attack on the peach roots. It is therefore not wise to plant peach trees near old wooden fences, or in places where there is likely to be much dead wood in the earth. The "yellows" is not often seen in cities or towns, because of the freedom of the soil from decaying vegetation which gives these funguses a chance to spread. Although it is not possible to cure a tree badly infested with "yellows," it is possible to destroy the fungus at the roots during the first year or season of its attack, and before it has had the opportunity to vitiate the whole circulation. Anything, therefore, popularly know as a fungicide, which can be so applied as to reach the roots attacked, will be successful. For a few single trees near a house, where hot water can be applied, this has been found extremely useful in destroying this fungus spawn. The earth can be taken away a little so as to form something of a basin, and the hot water poured in. If the water is soapy, or contains other matters in solution known to be destructive to fungus life, so much the better. Although the water may be boiling when applied to the ground, it cools sufficiently to prevent any injury to the roots, while the same temperature will be destructive to fungus life. As no one knows when the roots of the peach tree are attacked by this fungus, until they actually see the effects on the trees, no one would care to go to any great trouble with peach trees. No one likes the idea of throwing labor and cost away, and with this prevalent feeling, it is not likely that this great disease will ever be materially checked by any root applications. In a general way it may be done by careful watchfulness against the introduction of dead wood in the soil.

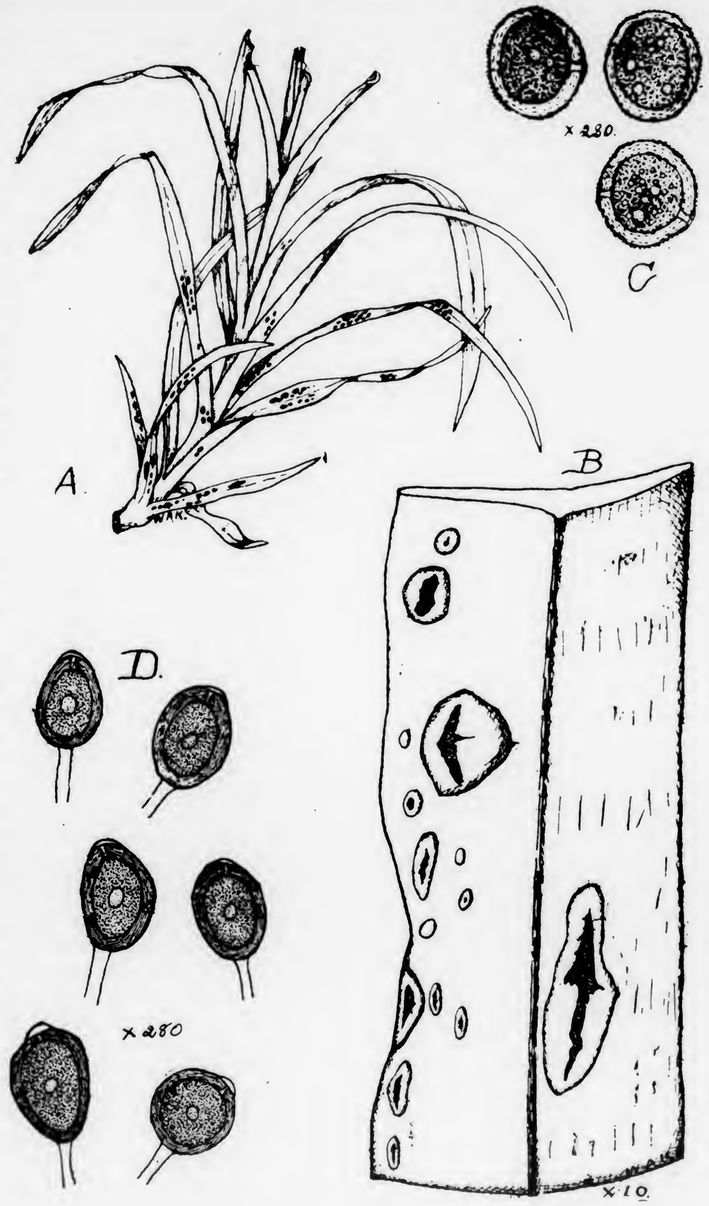
FORESTRY FOR PROFIT.—Mr. J. D. Lyman, Exeter, N. H., says:

"While I have demonstrated that man can greatly assist Nature in the growing of a crop of timber, I have seen some pungently truthful thrusts in extracts from your paper upon forestry matters. I have said, repeatedly, that there is no more danger of a forest famine in this country during the 20th century than of a water famine in the oceans. And to almost its full extent I agree with you when you say that the climate makes the forests, and not the forests the climate. That is a general truth a little,—only a little overestimated,—yet I believe in forestry and the growing of timber as a crop."

The correctness of the position occupied by Mr. Lyman is well illustrated by annual forest fires. When forestry becomes, as it will become some day, a branch of intelligent agriculture, there will be no forest fires, because there will be no dead underbrush left lying around to burn. Timber, as a crop, can be made to pay as well as any other crop, but it will have to be managed by intelligent agriculturists, and not by "Fire Wardens," or other political appointees. Fifty years would grow a good forest.

THE CARNATION RUST.—The man with the microscope was often an object of mirth with cultivators a half century ago. To-day he is in the highest esteem. When, in the not very long ago, he told the practical man that some plant disease was merely the work of a fungus parasite, he was laughed at. The grower knew better. The plant was suffering from bad soil, want of ventilation, "wet feet," or a deficiency in the proper mixtures. Now he knows and believes that the healthiest plants, under the most perfect conditions, can become deranged from nothing more than the growth of fungus parasites in the tissue, which somehow effected an entrance into the system by means of spores. It is the germination of these spores, under congenial conditions they have found, that produces the diseased structures.

In the proceedings of local societies, or of experimental gardens, are frequently papers of great value that deserve a wider circle of readers. Of these the value of the Proceedings of the Columbus Horticultural Society, has already been adverted to. A full account of the Carnation rust in a recent issue is so full of interesting facts, that the following abstract is prepared for the readers of MEEHANS' MONTHLY. It

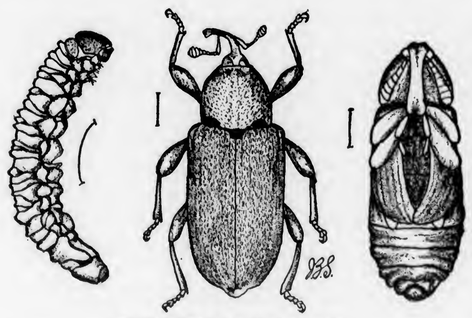


is from the pen of Prof. W. A. Kellerman:

In a bed of carnations, or in a carnation house, a plant suffering from the parasite loses its bright glaucous color, and can be distinguished at once from its neighbors by its duller hue. It will most likely be found suffering from a fungus named by botanists *Uromyces caryophyllinus*. With a pocket lens it will have the appearance in Fig. A, and more closely magnified, as in B. The powdery masses seen inside are the reproductive bodies called spores. As magnified, the spores are shown at C. Later in the season, these take another form, as shown at D. They are then termed winter spores. The earlier ones are, technically, uredo spores, and the later ones, telento spores.

The various solutions of copper are effective, but they must be applied early, so as to destroy the spores before they effect an entrance. After the 'rust' has appeared, it is difficult to check it. Good cultivators spray their plants before it appears,—at least before it has obtained headway.

SEEDS FROM A MUMMY.—A correspondent has some grains of corn, taken in his presence, from a mummy case, and inquires as to the best way of planting them, so as to insure growth. So far as the conditions that might be furnished by the seed sower are concerned, it may be observed that an experienced seedsman could tell at once, without planting, whether the seed ought to grow. If it failed then to germinate, it would be from too little air, or too much or too little heat, or some such condition. Certainly, a very fair and almost correct conclusion could be reached by an examination of the seeds themselves as to whether they were in germinating condition or not, and this is really all that is desired to be provided by the sowing of the seeds. The corn used by the Egyptians in their ceremonies was subject to heat, and it is not believed possible that any seed could escape so as to be preserved in germinating condition through all the long centuries, if even the seed had the power of preserving its vitality under ordinary conditions.



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Trichobaris 3-notata—larva, pupa and adult. Enlarged.

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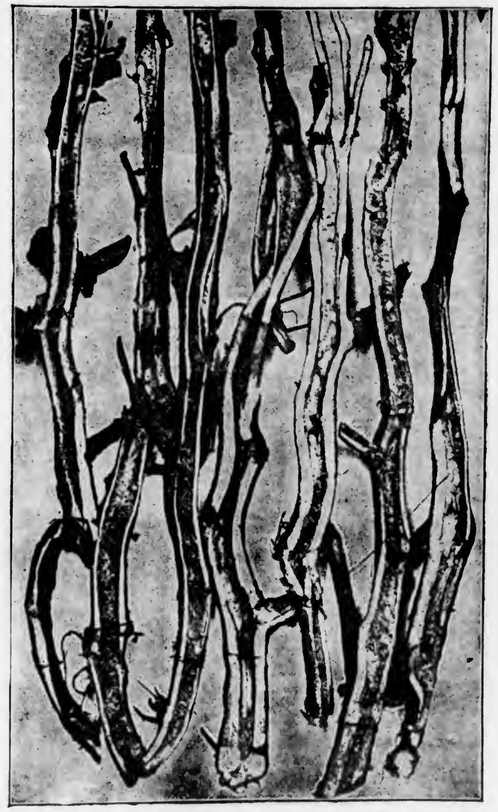

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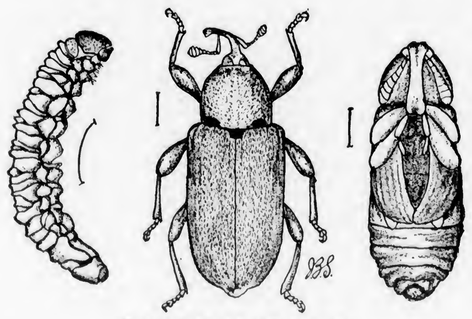

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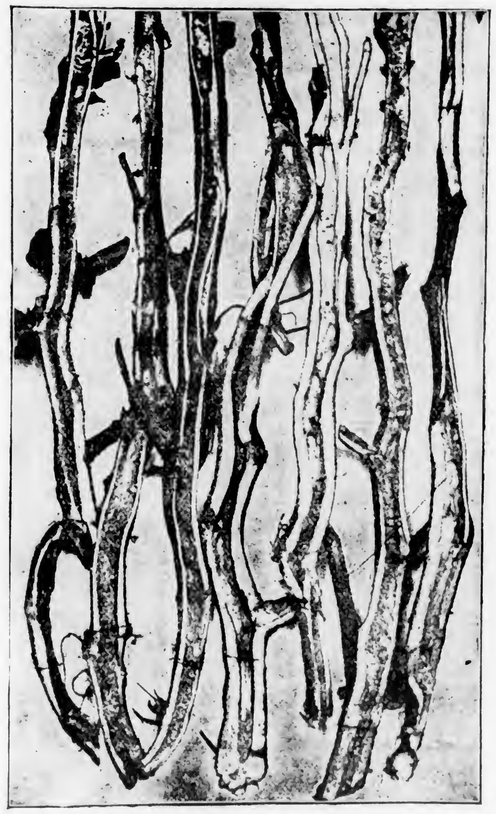

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INTENTIONAL SECOND EXPOSURE

PLANTING EVERGREENS.—Mr. F. Musselman, Middletown, Pa., asks:

"What is requisite for the successful planting of an arbor vitae hedge? I have for the past three years, each spring, planted a certain portion of my ground with Siberian Arbor Vitaes. My experience thus far has been very discouraging. My percentage of loss has been from twenty-five to fifty per cent. and this notwithstanding I have exercised—as I supposed—the greatest care in planting, giving personal supervision to the work; having each tree put in carefully; mulched the ground and watered regularly during dry weather. Does an arbor vitae require different treatment than the planting of some of the other evergreens?"

OPUNTIA OPLOCARPA.

Besides the query above, we have another from a Delaware correspondent, who writes of bad success with trees apparently first-class in every respect. He knows they were well planted, because he had manure brought, plenty of water given, and so forth. But a tree can have all these given, and yet not be well planted. To be well planted a tree needs to have the earth in as close contact with the roots as it was before removal. It is extremely rare that this is done. Even a good planter will leave hollow spaces. To plant a tree properly is simply to be sure that the earth gets into every hollow space, and is in close contact with every root. It must not only be in close contact with the roots, but tightly in contact. A small pointed pole should be continually worked as the earth is being filled in, and when enough earth has been filled in, to fairly cover the roots, the whole should be pressed down vigorously by the feet. Even a paving rammer might be used to advantage in many cases in good tree planting. In a vast majority of cases supposed good and very careful tree planting proves very bad planting. Arbor vitaes, Hemlock Spruce, and other trees with matted roots fail generally from nothing but want of care in filling in every cavity.

THE ELM-LEAF BEETLE.—The daily papers say the grand old Elms in the President's grounds at Washington, were recently cut down because the leaves were Weletonized by a "worm very much like a caterpillar."

HARDY CACTUSES.—Many who have taken it in hand to make large collections of cactuses in our country have abandoned them, for the stated reason that they are difficult to keep healthy. One grower remarked to the writer: "It is nonsense to talk of cactus spines being given to cactuses for their protection,—they were furnished by Nature to protect the numerous insects which Nature furnished with mouths expressly designed to feed on cactuses." But whatever may be said of the tenderer kinds, the hardy species can take good care of themselves, and collections of them make interesting ornaments in the flower garden.

When hardy species are referred to, it is understood as those which will live during the winter in the Middle States. The following have been long grown in Eastern Pennsylvania,—but there are probably others that would give as much satisfaction if tested.

One of the most common is *Opuntia Rafinesquii*. The Opuntias are those usually with flat, thickish fronds, and the flowers coming from the edges. But it is difficult to draw the line between one section and another, as the lines that may be drawn often overlap. *O. Rafinesquii* is the commonest kind. It is found naturally in many places along the Atlantic States, even to Canada. It produces numerous yellow flowers at the end of June or beginning of July. *Opuntia vulgaris* is nearly like it, but the fronds, as the segments of the plant are called, are usually smaller, thicker, and rather more oval in outline. In Cactuses, what would be leaves in other plants, are united together and form a succulent envelope to the woody stem. The clusters of spines are arrested branches. From the base of these branches very small, imperfectly-formed leaves are occasionally produced. They look like small, green worms, and soon wither and fall. Critical botanists can tell *Opuntia Rafinesquii* from *Opuntia vulgaris* by a difference in the form of these depauperate leaves.

A very pretty *Opuntia* was sent to the writer some years ago under the provisional name of *O. Rafinesquii* var. *oplocarpa*. It is so different in appearance from other forms of *O. Rafinesquii* that it must have a distinctive name with nurserymen. It has, therefore, been listed in Meehans' catalogue under the name of *O. oplocarpa*, for some years past.

Inquiring of Prof. Trelease whether he knew of any change in Dr. Engelmann's views, as might be gathered from his papers, as to its specific rank, he kindly supplies the annexed note:

"The *Opuntia oplocarpa* was collected near Golden, Colorado, by Greene, in October, 1870, and, so far as Dr. Engelmann's notes show, he was in a little doubt as to its distinctness from *symochila*; while he was also disposed to look on it as a variety of *Rafinesquii*. His memorandum description of it runs in this way: 'Joints transverse or orbicular, deep green, like *Rafinesquii*, 3 or 3½ inches in diameter. Areolæ rather close, oval, all the upper ones spiny, lower ones unarmed, all with a pencil of long brown bristles at upper end. Spines almost always in twos, rather stout, straight; upper one red-brown, especially towards the base, stouter, erect or porrect, lower one paler or white, deflexed, usually weaker. Fruit two inches long, pulpy, rather dry, clavate, with hemispherical umbilicus, brown red, like *Rafinesquii*, with about 20 very small areolæ, now naked, but said to bear one or two red-brown spines, three to six lines long, one horizontal, the other shorter and deflexed and quite deciduous. Seed twisted, wavy.'

"Should you wish to refer to this again, will you not please cite page 1479 of the Engelmann Notes as giving the reference here quoted."

To our mind, making all allowances for the variations in species of Cacti known to be common, it deserves the full rank of species, and might fairly be known as *Opuntia oplocarpa*. The red-brown spines referred to on the fruit, and which probably suggested the name, have not been noted on the cultivated plant. The "deep green" of the joints or fronds is not "as in *Rafinesquii*," but they are of an ashen grey. The fruit is rather cylindrical than "clavate" as in *Rafinesquii*, and the joints are generally spathulate, and somewhat angular at the widest part. The flowers are pale straw color on the upper half of the petals, and of a reddish-brown at the base. *Rafinesquii* is seldom as spiny as this is, and it has often the long thread-like silvery bristles common to *O. Missouriensis*.

O. Missouriensis is another beautiful hardy Cactus,—ashen grey, and covered with silvery hair and bristles.

Of the nipple cactuses, or Mamillaria, three endure the severest winters. One of these, *M. prolifera*, has very large flowers, rivaling in color (as Nuttall remarked when first describing it) the famous "cat-tail cactus," *Cereus flagelliformis*. *Mamillaria Missouriensis*, which has had no end of names given to it and its little variations, is remarkably pretty. The bright yellow flowers are produced in abundance; but, strange to say, makes no effort to form the fruit the same season. The fertilized ovaries are dormant for 12 months. When the new crop of flowers push up the next year, the resting ovariums also take a start and mature, and hence we have the pretty red, holly-like berries and the flowers all at the same time.

More might be written, but enough is given to show how much in ornamental gardening may be made of hardy cactuses.

NEW OR RARE PLANTS.

BOUGAINVILLEA GLABRA.—Some magnificent specimens of this showy Brazilian plant comes to the conductors' table from Galveston. What a chance the people of this section have to cultivate in the open air what northeners have to coddle under glass. By-the-way, this is generally grown under the name of *Bougainvillea spectabilis*, which is a distinct and less showy species.

IMPROVED ABUTILONS.—Mrs. Theodosia B. Shepherd, who has done so much towards helping women to attain a reputation as seedsmen and florists on the California side of our continent, has been giving attention to the improvement of *Abutilon*, and has raised a large number of beautiful varieties, which she is now offering to lovers of flowers. She makes a good point in their favor that they will last a good while after cutting without withering. The plants also keep long in bloom.

ASTILBE JAPONICA.—SEE PAGE 171.

They are very useful therefore for the adornment of the hair, or for the dresses of ladies and gentlemen at parties, or other public entertainments, where many other flowers would soon wither.

BLETIA HYACINTHINA.—In former times, when the cultivation of ornamental plants in great variety was very common in greenhouses, one of the most interesting was a dwarf purple orchid from Japan, called *Bletia hyacinthina*, and of so easy a culture that gardeners used to say that it was almost impossible to kill it, no matter how bad the treatment. It was one of the prettiest and most desirable of all winter-flowering plants. It only reached some six or seven inches in height, with about three or four leaves on a flowering stem; but the flowers were comparatively large, with some six or eight of its bright purple flowers on the stem. It seems to have almost disappeared. At any rate the writer has not met with it for several years. When attention is being given to hardy flower border plants, it might be well to look it up and again bring it forward, as, with perhaps a slight protection of leaves in the winter time, being from Japan, it would doubtless prove hardy in our climate.

THE HARDY FLOWER GARDEN.

THE CHINA ASTER—Those of us who are no longer young will remember the rapid strides taken by florists for the improvement of this pretty flower. Not a half century ago, it was little more than our ordinary, wild Ox-eye Daisy in size and shape, the color only being a lightish blue. In that condition it had remained many years before. It was introduced into Europe as early as 1731. Varieties of a lighter color, somewhat rosy and white, found their way into England from France about twenty years later; but although a few additional shades of color were introduced, they were practically the same up to the incoming of the present century. So far as our own country is concerned, it was not until nearly 1840 that the numerous varieties, as improved by the Germans, were cultivated. It is scarcely fifty years now since what we knew as the "double forms" were introduced. Since that time progress has been very rapid. Not only the flowers are better formed, but attention is given to the habit also, and an aster which has a good, dwarf habit, and is very floriferous, is very acceptable.

INCREASING TUBEROSES.—The advice usually given, to throw away tuberose plants at the end of the flowering season, and get new bulbs, if one is anxious to have flowers the next season, is good advice, because it takes two years of growth before a tuberose bulb is strong enough to flower; but one does not always care to throw away a plant on this account,—a bulb is often a present from a friend, and for other reasons it is desirable to retain the original stock. The old bulb, after flowering, is of no more use,—nor is any bulb, for that matter. Every bulb dies after flowering, and the side shoots, or some other new section of the plant, has to make flower bulbs for the future. This is the way with the tuberose. Though the central bulb does not exist any more after flowering, numerous small bulblets are thrown up around the old stock. If a larger one of these be taken off and planted in the spring, in good rich earth, with an area all to itself, it will make a very strong bulb that may flower the year following. No doubt under some circumstances these off-sets of the previous year will flower the next. It is only the small and inferior ones which take a longer time than a year to come to a perfect blooming condition.

DAFFODILS.—Many old-fashioned flowers continue in popular estimation, notwithstanding the changes in fashions, for there are fashions in flowers as well as in dress or manners; but the old-fashioned daffodil is just as highly estimated as ever. No good garden is considered complete without its clump of daffodils. If there are any gardens in which the daffodil has not yet made its appearance, it is well to remind the owners of these unfortunate places, that the autumn time is coming, and that this is the proper time to plant them. The daffodil sends out its roots throughout the winter time, no matter how hard the ground may be frozen. The young fibres have internal heat, or they would not be alive, and this heat is sufficient to thaw enough moisture to keep the bulb alive. It is this work of the roots during the winter which makes it necessary to plant the bulbs in the fall of the year. The earlier they are planted, the stronger they will flower the ensuing spring.

THE ALASKA FERN.—There is in cultivation a remarkably pretty fern known as *Aspidium aculeatum*, which is generally known as the Alaska Fern. It grows naturally in Alaska, but is by no means confined to Alaska, for it is found in nearly all the hyperborean regions. The form in cultivation has the power of producing bulblets in various portions of the frond, and for that reason occasionally goes by the name of *Aspidium proliferum*. It is subject to the attacks of the thrips; but good managers of house plants keep it down very well by spraying the plants occasionally with tobacco water.

FRUITS AND VEGETABLES.

THE WATERMELON.

The last of the gay summer sisterhood blushing,
Ascends her green throne where the fruit clusters vie—
And rejoices at eve when Apollo is flushing
With sapphire and rosetint the stream and the sky.
No more o'er the grain field the Zephyrs are playing
With light and with shadow in hurried career:
And though there is scarcely a green leaf decaying,
The field is a desert, rough, yellow and sere.
'Tis the reign of Pomona, whose treasures are glowing
Ripe, ruddy and juicy on long pendent boughs;
'Tis the time of tall grass which the laborers are mowing,
While the hay scented zephyrs are fanning their brows.
But the glory of August, not quite so capricious—
Yet red as a girl's lip and cool as a well,
Is the green coated-melon, so plump and delicious,
With the brown mottled seeds in their roseate cell.

I ask not a peach, like the cheek of a maiden,
Downy and soft as a Georgian's may be;
I care not for boughs with their golden apples laden,
When the heart of a melon is blushing for me.

If this life has a care, 'tis not then that I know it;
If the day oppress others, for me it is bland;
I seem to be Ariel, Puck, or a poet
Who feasts with Queen Mab in her own fairyland.

I make the sweet melon my favorite topic—
Thou chief of the offspring of sun and of dew:
In spite of bananas, the pride of the tropic,
Of famed Chirimoyas the boast of Peru.

Give us cold "Mountain Sweets" from New Jersey,
Nor ask us to sigh for the grapes of some orient land—
The peaches of Persia; the figs of Damascus;
Or the idolized fruits of remote Samarcand.

I have shaken ripe oranges oft, where they fell on
Floridian flowers; I have dreamed of the date;
But dearer to me is the dew-tempered melon,
Fresh from the sand of my loved native state.
Old State, ever dear to the farmer and florist,
I love thy broad grain fields and worm fences too:
Rosy laurels that light the green caves of thy forest,
Where the pines scatter diamonds from raindrops or dew.

And truly that man so unlucky, I pity
Who never has seen the grand spectacle, when
The fruit Saturnalia reigns in our city—
The loved of Pomona, the city of Penn.

The poet may sing of the Orient spices,
Or Barbary's dates in their palmy array—
But the huge rosy melon in cold juicy slices,
Is the Helicon font of a hot summer day,

Where I bathe the dry wings of the spirit, and sprinkling
Sweet drops on the pathway of dusty old Care,
I hold father Time from his villainous wrinkling
Of features that never had graces to spare.

—TIMOTHY ABBOTT CONRAD.

IMPROVED ABUTILONS.—Mrs. Theodosia B. Shepherd, who has done so much towards helping women to attain a reputation as seedsmen and florists on the California side of our continent, has been giving attention to the improvement of *Abutilon*, and has raised a large number of beautiful varieties, which she is now offering to lovers of flowers. She makes a good point in their favor that they will last a good while after cutting without withering. The plants also keep long in bloom.

ASTILBE JAPONICA.—SEE PAGE 171.

They are very useful therefore for the adornment of the hair, or for the dresses of ladies and gentlemen at parties, or other public entertainments, where many other flowers would soon wither.

BLETIA HYACINTHINA.—In former times, when the cultivation of ornamental plants in great variety was very common in greenhouses, one of the most interesting was a dwarf purple orchid from Japan, called *Bletia hyacinthina*, and of so easy a culture that gardeners used to say that it was almost impossible to kill it, no matter how bad the treatment. It was one of the prettiest and most desirable of all winter-flowering plants. It only reached some six or seven inches in height, with about three or four leaves on a flowering stem; but the flowers were comparatively large, with some six or eight of its bright purple flowers on the stem. It seems to have almost disappeared. At any rate the writer has not met with it for several years. When attention is being given to hardy flower border plants, it might be well to look it up and again bring it forward, as, with perhaps a slight protection of leaves in the winter time, being from Japan, it would doubtless prove hardy in our climate.

THE HARDY FLOWER GARDEN.

THE CHINA ASTER—Those of us who are no longer young will remember the rapid strides taken by florists for the improvement of this pretty flower. Not a half century ago, it was little more than our ordinary, wild Ox-eye Daisy in size and shape, the color only being a lightish blue. In that condition it had remained many years before. It was introduced into Europe as early as 1731. Varieties of a lighter color, somewhat rosy and white, found their way into England from France about twenty years later; but although a few additional shades of color were introduced, they were practically the same up to the incoming of the present century. So far as our own country is concerned, it was not until nearly 1840 that the numerous varieties, as improved by the Germans, were cultivated. It is scarcely fifty years now since what we knew as the "double forms" were introduced. Since that time progress has been very rapid. Not only the flowers are better formed, but attention is given to the habit also, and an aster which has a good, dwarf habit, and is very floriferous, is very acceptable.

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INTENTIONAL SECOND EXPOSURE

PECAN CULTURE.—Mr. F. G. Sampson, Boardman, Fla., says: "I notice item, in the June issue of this magazine, on the "Grafted Pecan." We have a piece of land with thick growth of large hickories. Has there been any practical success made in grafting pecans on them,—if so, can you give me directions? Getting our oranges so thoroughly wiped out by freeze, makes us look about for another string to our bow. We have a small grove of seedling pecans; but there is such an uncertainty of quality when they come into bearing, and it takes a good many years to grow them to bearing size. If we could use these old roots, it seems as if it would be a great gain if they can be grafted. Any information you can give me will be very much appreciated."

Scions taken from bearing trees of any kind, grafted on seedling trees, produce fruit much earlier than the seedling trees left ungrafted. This would be as true of the pecan as of other trees. The method of grafting is the same as for other kinds of fruit or nut trees. The best variety of pecan might be selected from trees bearing in a wild state, from which to take the grafts. It is barely possible there may be some little niceties in pecan grafting and culture not generally known, for which MEEHANS' MONTHLY would be obliged.

LOGAN BLACKBERRY.—This singular fruit ripened a few berries in the vicinity of Philadelphia, and proves a welcome addition to our list of fruits.

It is derived from the Californian wild species *Rubus ursinus*. It is the only true blackberry in California, the other species of *Rubus* native there being classed with the raspberries. But the line between a blackberry and a raspberry is very finely drawn. The raspberry, as it ripens, drops from its receptacle as a thimble might from one's finger. The blackberry remains fast to its stem or receptacle. The wild *Rubus ursinus* of the Pacific cost has a black, shining berry.

The improved variety in question has a purplish red fruit, and about the size of a moderate Lawton Blackberry. One might take it for a raspberry instead of a blackberry by its general appearance, but it has the blackberry character as noted above.

The canes which bore these few berries were nearly killed to the ground by the winter, so that to get a full crop, the canes will have to be buried under the earth. As the habit is somewhat of a trailer, this will be easy to do.

The flavor is pleasantly acid, and will be grateful to most palates.

PROTECTING EARLY STRAWBERRIES.—The *Minnesota Horticulturist* states, that in that uncertain climate, careful strawberry growers provide themselves for an emergency in case of early frosts. Large quantities of useless hay is kept close at hand, and when there is a chance of a late frost, the hay is sprinkled lightly over the whole of the strawberry field. On May 14, of the present year, the thermometer went eight degrees below the freezing point, and there was frost on five successive mornings. The strawberry fields were white with blossoms. On the Thayer Fruit Farm, there were more than one hundred acres of strawberries, and a score of men and teams were at once employed when the thermometer neared the freezing point, to work in scattering the hay over the field. Ninety per cent. of the area was covered before the litter gave out. The result was that the strawberry crop of the covered portion was uninjured, while the uncovered part was ruined. This is one of the most valuable experiments for protecting strawberries from early frosts that have come to our notice.

MARKET GARDENING IN NORTHWEST LOUISIANA.—Col. W. B. Hillyard says:

"A model Louisiana farm may furnish beef, pork, mutton, veal, butter, cheese, eggs, chickens, etc., in abundance. Also corn, wheat, buckwheat, oats, rye, barley, millet, hay, beans, peas, broom corn, castor oil beans, cotton, sugar, rice, tobacco, pumpkins, sweet and Irish potatoes, pindars, choufas, melons, red and other clovers, grasses of numerous kinds, ramie, jute, flax, cashaws, gourds, bene plant, indigo, arrowroot, ginger, cabbages, turnips, okra, Jerusalem and bur artichokes, cucumbers, onions, and all other garden vegetables that can be produced in the Northern States.

"All the fruits of the Northern States, except perhaps gooseberries, damsons, and one or two others, can be raised in the northern part of this State, and many tropical fruits in the southern part, as we have elsewhere noted more particularly."

THE WINTER NELIS PEAR.—The Winter Nelis Pear is one of the most popular pears that come from California; but it is seldom grown by eastern orchardists. The general impression is that it is not generally a success. Ellwanger & Barry, of Rochester, N. Y., seem to have more success with it than others in the East. It is more likely that the reason for its scarcity in eastern orchards is some other than that it will not grow well. It is not a handsome looking pear,—the splotches of brown and yellow giving it rather a freckled appearance; but the flavor is so delicious that, if there is not difficulty in its adaptability to eastern climate or soil, it ought to be more generally grown. Sometimes the scarcity of the variety is more dependent on the nurserymen than on the orchardists. The nurserymen like a fast growing, thrifty tree, which is more satisfactory to a majority of customers than the variety of slow growth and scrubby appearance. The Winter Nelis Pear is not a rapid grower, and possibly this and not the inadaptability is the cause of its scarcity.

THE EICKE, MILWAUKEE AND HAMILTON APPLES.—Western orchardists have endeavored, by raising seedlings, to introduce varieties suited to their western climate. Mr. J. V. Cotta, of the town of Nursery, in Illinois, reports that three excellent varieties, among some others, have been produced. The Eicke Apple originated at Omaha, Nebraska, and is a depressed—globose fruit, about 12 inches in circumference, its season is the winter, and it is enormously productive. The Milwaukee Apple was raised by Geo. Jeffery, of Milwaukee, from the Duchess of Oldenburg, and is also nearly four inches across. It is a bright colored apple, yellowish on the shady side, in season from January to May, and desirable for either cooking or table use. The Hamilton Apple, also raised by Mr. Jeffery, is rather smaller than the other, greenish yellow, with a rosy blush. It is also a winter apple, desirable for the dessert or for cooking.

CANNED PEAS.—Most persons must be aware of the enormous increase in the industry of canning green peas; and the growing of peas for the sake of canning is getting to be one of the most improved of market gardening industries. As usual, California is getting to be foremost in this branch of industry. In some parts of California, hundreds of acres are planted for the sake of the green peas. The *Pacific Rural Press* states that one planter, near Yuba City, had, last year, one hundred and fifteen acres. It kept two hundred and fifty men, women and children employed for two weeks. Half a cent a pound is paid for the pods. Thirty persons are engaged in hulling and picking the peas. The closing or capping of the cans is done by machinery. Six thousand cans were packed, capped and corked in a single forenoon. Altogether, the prospects for green pea growing in California seem very bright.

PLANTING POTATOES.—The potato tuber is very little more than a bud. In the ordinary branches of trees, the stronger the bud the more vital power it contains, the better is it for propagating purposes; and it is just the same with the potato. Sometimes, indeed, the plant itself produces small potatoes in the axils of its leaves, as if it were anxious to tell those who were ignorant of the true nature of what we call potatoes. It is frequently the habit to let the potato sprout in warm cellars, and before planting to pull out the sprouts and cut the potatoes into sets; but it has been found by experience that the tubers are weakened, and the potato set that has once had its sprouts torn off will only result in weak plants. Potatoes intended for seed should be kept in a very cool place all the winter, so as to encourage no sprouting until the planting time comes.

THE SPINELESS GOOSEBERRY.—Mr. C. H. Joosten, of New York, sends a branch of a gooseberry that produces no thorns. The smooth red gooseberries were as large as the wild American plum. It is a variety of the European race. It will probably thrive wherever the kind known as the Industry does well.

THE WORDEN GRAPE.—The Worden Grape did not appear with an army of trumpeters before it, as did some others, but it is a general favorite and is considered to produce almost,—if not quite, as successful a crop, in every respect, as the Concord. They were in Philadelphia markets the first week in August.

BIOGRAPHY AND LITERATURE.

AUTUMNAL DREAMS.

When the maple turns to crimson
And the sassafras to gold;
When the gentian's in the meadow
And the aster's on the wold;
When the moon is lapped in vapor
And the night is frosty cold;

When the chestnut burs are opened
And the acorns drop like hail.
And the drowsy air is startled
With the thumping of the flail—
With the drumming of the partridge
And the whistle of the quail;

Through the rustling woods I wander,
Through the jewels of the year,
From the yellow uplands calling,
Seeking her that still is dear;
She is near me in the autumn,
She, the beautiful, still is near.

—BAYARD TAYLOR.

NOTE ON THE SWEET-SCENTED WOODRUFF—With a plant of *Asperula odorata*, kindly sent by Mrs. Seliger, of Hartford, Conn., is the following interesting note:—

"I have mailed a sample, with roots, of *Asperula odorata*, to your address. It is the German "Waldmeister," the spring flower of the green woods of beech and oak, much sought for by all the people for the Pfingst festival, when the houses and rooms, even the kitchens, are decorated with wreaths of it and the young birch bushes, all which imparts a woody fragrance through the house. The origin of this custom dates back to the times of Druid worship of the pagan people. The greens, if kept in desks and wardrobes, will impart its sweet odor for a whole year to its contents. It delights to grow in clean, open places. I have a large bed of it in my garden."

THE FRENCH NATIONAL FLOWER.—As a Frenchman, it is with much surprise I learn, through MEEHANS' MONTHLY for July, that *Iris germanica* is the National Flower of France * * * *. France has no national flower that I ever heard of. The Lily is the flower of the ex-royal family of France, and neither Iris nor any other plant is a national emblem. So I really think no Frenchman need go into hysterics over a fact which does not exist, and you were quite right not to mention a circumstance which is mere imagination. HENRY DE VARIGNY, Paris.

A question has often been raised as to whether the floral emblems of the French Monarchy represented the Lily or the Iris. The term "Fleur de Lis," that is Lily flower, would settle the question only for the representation of the flower itself. These are not always alike, but none ever represent Lily flowers. They mostly look like Iris flowers. A short time before his death, the late Count of Paris had a souvenir made specially for the writer of this paragraph, with the floral emblems of his house——the "fleur de Lis," moulded thereon. These could scarcely be anything but *Iris germanica*. But there is nothing in this but the name, so far as the underlying sentiment is concerned, as this Iris is a native of France as well as Germany.

ELECTRICAL HORTICULTURE.—Bulletin No. 37, of the West Virginia Agricultural Experiment Station, of Morgantown, W. Va., has an unusually interesting essay on the use of incandescent lamps in plant culture. Many papers have been published to show that plants can be made to double their growth in a short time by the use of incandescent lamps; but for some reason or other the statements made in these papers are not received with strong conviction. The experiments detailed in this paper, however, show conclusively that the growth of plants is remarkably accelerated by the use of electric light. The author remarks that there is no such thing as a plant becoming worn or tired out, because of the stimulating influence of continuous light. This is quite reasonable, on reflection. While with animals rest is required once in twenty-four hours, plants require rest but once a year. Winter is their season of rest,—the "night" of plants, so to speak; and the summer, is their "day" in which they have to grow.

AILANTHUS.—It is hard for the botanical flock to keep pace with their shepherds. One corrects MEEHANS' MONTHLY for spelling Ailanthus "Ailantus," and quotes the MONTHLY'S own authority, "Index Kewensis." The whole question turns on whether it is right to correct a manifest error in the spelling of the original, or whether "once in error always in error," should be good law. The original describer of the Ailanthus tells us that in its native country, it was known as *Ailanto*, the Tree of Heaven, from its rapid growth towards the sky. He should have written "Ailantus," but by an evident slip, he wrote "Ailanthus," which means something about a flower, if it has any meaning at all. That this was the intention of the author, is clear from the specific name, written, *glandulosa*. If the author had intended Ailanthus, the specific name would have been written *glandulosus*. De Candolle long ago made the correction, and *Ailantus* has come into general use, as the author intended. But "Index Kewensis" puts it back to the original, and we have to write *Ailanthus glandulosa*, *A. excelsa*, *A. moluccana*, and so on through the whole list of species, exposing us to the criticism of every Latin schoolboy who has gone through his Latin genders, and who is not supposed to know anything of botanical customs. For once we must look over "Index Kewensis," and stick to *Ailantus*.

VILMORINS' "LES FLEURS DE PLEINE TERRE."—Mons. Edward Andre, of Paris, kindly sends the following correction:

"Allow me to thank you for the congratulating manner in which you have spoken of Vilmorins' *Les Fleurs de pleine terre* in your issue of last June (p. 119).

"But a heavy mistake occurred in that short note. The book has not been "prepared" by me, but really written and published by Messrs. Vilmorin, who have a legitimate claim to be praised for their beautiful work.

"My only contributions to this work has been to add some samples of parks and gardens, public and private, specimen plans of rock and alpine gardens, together with detailed specifications and explanations of the proper planting of the said parks and gardens, in accordance with my personal theories on the subject. I am greatly honored to have been appointed by Messrs. Vilmorin as the author of this special chapter of their volume."

THE SOUTHERN FLORIST AND GARDENER.—America has the best horticultural trade journals in the world; but until a few years ago the garden lover, the lover of gardening for its own sake, had but a meagre representation in the literature of horticulture. Even the "Horticulture" of many of our colleges had far more of the farm than the garden about it. The appearance of *Garden and Forest* marked a new era, and since then we have the *American Garden*, *Gardening*, and others doing excellent work in fostering true gardening taste and intelligence.

Southern gardening, almost a field to itself, has now a worthy representative to take a place in this excellent list, in the *Southern Florist and Gardener*, published at Louisville, Kentucky. It has just entered on its second volume. MEEHANS' MONTHLY offers it a hearty welcome.

THE SHAMROCK.—C. E. S. says: "The Irish Shamrock was originally *Oxalis Acetosella*. During the O'Connell agitation for repeal it was the custom of the repealers, when attending one of the monster meetings, to wear a few stems of it under the shoe string or hat band, by which they could recognize each other as "*repealers*" in the crowd, without speaking. This soon exhausted the stock of *Oxalis*. They then adopted *Trifolium repens* as a substitute. It is now the Shamrock. It is called Shamrock in Ireland, Dutch Clover in England, and White Clover in the United States."

SECTIONS OF AMERICAN WOODS.—Another installment of these wonderfully beautiful sections of American woods has been received from Dr. Romeyn B. Hough. When the Japanese had such sections in book form at the Centennial Exposition they were regarded as marvellous,—but Dr. Hough's are still more remarkable. They are so thin as to be used for invitation cards! Bound in book form, they can be placed on library shelves.

PROF. BABINGTON.—One of the foremost of British botanists and author of "Manual of English Botany," died on the 27th of July. He was born on November 23, 1808.

GENERAL NOTES.

GOOD ENGLISH WRITING.—A New York daily recently expressed the opinion that we had to look to newspaper work for the best specimens of good English. In another part of the same issue, it has the following:

"Men buy more flowers than women, for several reasons. One is that the men buy them for the women, and another is that men like flowers and are not disposed to deny themselves anything they like if money can get it. In the same way as a man will take a drink without considering whether he can afford it, so he will step into a florist's and spend two or three dollars for flowers if they strike his fancy. Women will not do that. They make a mental calculation of the change in their pocketbooks even before they buy ice cream or soda water, and it is the same way with flowers."

We have only to add a few more words to the last part of the sentence, so as to make it read: "It is the same way with flowers, which make the same calculations that the ladies do, ere the money goes from their floral purses," to see the good English.

WOODEN STREET PAVEMENTS.—The wooden street pavements have been generally abandoned in American cities, posssibly from poor materials being used, leading to early decay. In Philadelphia hemlock and pine were ignorantly employed; but the locust of Cincinnati and the arbor vitæ of Toronto were not much greater successes. European cities seem to have better success. Wooden pavements are popular in London. The Blue Gum of Australia is being employed there.

INDIAN RUBBER PLANTS.—A large number of plants in gardens known as "rubber plants" are not among those which furnish the chief amount of rubber used in the arts, and the Indian Rubber,—so called,—and so common in gardens, furnishes but a very small part, if any, for the rubber of commerce. There are quite a large number of plants which furnish this gum. In Africa they have discovered that plants of the genus *Landolphia* furnish immense quantities of rubber equal to any in the market, and that it can be collected at a comparatively low cost. Africans are, however, not disposed to be industrious, and only six hundred pounds were collected last year, although Europeans have offered strong inducements to the natives to collect. It is believed, however, that in a few years rubber from the Landolphias will play no mean part in commerce.

TREES IN THE CITY OF LONDON.—Within the memory of many persons, London was once, like many American cities, absolutely treeless,—nothing but brick, stone and mortar being seen anywhere. Of late years intelligent horticulture has been drawn into service, and trees and shrubs are being planted everywhere, and not merely planted, but well cared for afterwards. Experts are employed especially for this purpose. A census has recently been taken by order of the London City Council,—a census easily taken by reason of the expert tree men who are regularly employed to look after them. The number of trees growing in the public highways of the City of London is found to be fourteen thousand seven hundred. These are on the public highways alone, and not in the parks. This shows progress in a sensible direction.

THE FORESTS OF ALASKA.—The forests of Alaska get so much assistance from the atmosphere, in comparison with trees growing in dryer climates, that the trees grow so close together as to be in many cases comparatively worthless for timber. *Abies Menziesii* and *A. Mertensiana*, together with a considerable sprinkling of the Arbor vitæ, *Thuja gigantea*, form the bulk. Though of little service for timber, they are of immense value to the natives, as from the roots of these trees they obtain fibre which they employ in making baskets, twine, and cord for many valuable purposes.

LYGODIUM PALMATUM.

SNAKE TONGUE FERN.

NATURAL ORDER, FILICES.

LYGODIUM PALMATUM, Swartz.—Stem flexuous, climbing; fronds conjugate, palmate, five-lobed, lobes entire, obtuse; spikelets oblong-linear, from the upper fronds, which are divided and contracted into a compound spike. Wood's *Class-Book of Botany*. See also Gray's *Manual of Botany of the Northern United States*. Chapman's *Flora of the Southern United States*, and Eaton's *Ferns of the United States*.

According to Linnæus, the pretty climbing fern here illustrated was figured by James Petiver in a work called "Gazophylacium Naturæ et Artis," issued in five volumes, between 1702 and 1704. This seems to have been the earliest notice of it on record. But little was known of it by the earlier of more modern botanists. It is not mentioned in Gronovius' "Flora Virginica," where the collections of Clayton are described. By Linnaeus, it was regarded as an *Ophioglossum*,—*O. palmatum*. Swartz, a leading authority on matters connected with fern-life, seems to have been the first, in Schrader's Journal for 1800, to divide these plants as *Lygodium* from *Ophioglossum;* though Cavanilles, Willdenow and others, about the same time, made efforts in the same line. Willdenow's name, *Hydroglossum*, is still retained, in some classifications, as the name for a sub-division of the genus,—and Steudel accepts *Hydroglossum palmatum* for this plant.

The original genus, *Ophioglossum*, has received the common name of "Adder's-tongue,"—from some fancied resemblance, Prior says, in the fertile spikes, to the tongue of that serpent. Nuttall, in his "Genera," when describing the differences between *Ophioglossum* and *Lygodium*, retains "Adder's-tongue" for the former, and applies "Snake's tongue" to the new division—*Lygodium;* but does not say whether this name is a suggestion of his own, or that it was already a common name. But having been used by him, it is adopted here. So far as any suggestiveness of snakedom is concerned, the spikelet (Fig. 4) is more appropriate to the tail of a rattlesnake, than to the tongue of any of these creatures.

Our fern is of more than usual interest in connection with the history of the past. At the present time the genus embraces about fifteen species, and these are thinly spread over many widely-separated portions of the Earth. Some are found in the East and the West Indies,—there are a few in Mexico and South America, and there are representatives in New Zealand, Madagascar and Japan. They all agree closely in general appearance, though botanists can readily see differences on which to name and classify them as distinct. *Lygodium palmatum*, the one here figured, is the most northerly of all, and is found sparingly scattered over most portions of the Eastern Atlantic States, but scarcely extending beyond the Allegheny Range. After a disappearance of many thousands of miles the genus reappears in Japan, in the form of *Lygodium Japonicum*, the only species in Eastern Asia. But a remarkable feature is the appearance in the intervening territory of numerous species in a fossil condition, now wholly extinct, but so near to some existing species that it is difficult to decide for their distinctness. A number of these are found in Colorado. The facts go with many others to show the close relationship, in former times, of Eastern Asia with our country; and that great cosmical changes have occurred in the more western portions that did not effect the eastern,—changes sufficient to destroy the existing vegetation, leaving these on the eastern slope, and those in Japan, to tell, by their survival, of the catastrophe that involved their brethren. Some extinct species are also found in a fossil condition in England and other parts of the Old World. The more numerous species in tropical regions indicate that those portions of

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INTENTIONAL SECOND EXPOSURE
TEXT CUT OFF

the earth have not undergone serious changes since the great epoch which saw the land sink beneath the Pacific Ocean, and the more northern portions of the earth experienced great change.

Our species is not in great abundance anywhere along the sea-board States in any one place, though in comparative plenty in some parts of Connecticut. It became an article of trade, at one time, to a considerable extent, and there was some danger of extinction. It was then known as the Hartford Fern. The legislature was called on to protect it; not so much from any love for the beautiful plant, or for any especial care for its preservation, as from pecuniary motives on the part of land owners, who saw profit in it for themselves. It was enacted in 1869, that a fine of $100 and imprisonment for not more than twelve months should follow conviction for taking from the land of others any cranberries, fruits, vegetables, produce of any kind, or Creeping Fern.

The great strong-hold of the fern appears to be in Kentucky. Michaux seems the first to note it particularly. He had started from Pittsburgh for a voyage down the Mississippi to New Orleans; but seems by his journal to have been dissuaded, on reaching Tennessee, by Governor Clark; and he diverged from his former course, and went up the Cumberland River to take a new route back to New York. Under date of March 5, 1796, he notes that he commenced his exploration of the Cumberland Mountains, and noticed when four days out from Knoxville, "une fougere grimpante," of an unknown genus, that he had seen on the 14th of November. His entry at that date is "A six miles du Poste Middleton et dix-huit miles avant d'arriver au haut de Cumberland Gap ou une fougere grimpante qui occupoit plus de six acres de superficie du terrain pres de la route. A cette saison ou la gelee avoit produit de la glace de trois à quatre lines d'epoisseuro, cette plante n'avoit nullement été endommages."

It must have been in the same region that that enthusiastic lover of nature, John Williamson wrote of seeing it, in a paper contributed to the "Bulletin of the Torrey Botanical Club" for 1880. "The Cumberland River," he says, "is a beautiful stream of clear water, flowing through a very wild country, and having high sandstone cliffs on each side. The mountains are well wooded. Hemlocks, oaks, chestnuts, and birches, two magnolias and the Tulip Tree, predominating,—vacciniums, laurels and rhododendrons forming the undergrowth. My first ramble was over the hills, under the falls. I had not proceeded far, when I found a few plants of *Lygodium palmatum*, an old favorite that I first met with a few years ago in Rockcastle Co., Ky. Tramping carelessly along, the climbing beauty seemed to haunt me. If I looked up, there it was hanging in heavy tresses from the cliffs above, away out of reach. If I looked under my feet, there it was ready to entangle me in a mazy web. Move in any direction, it would stare me in the face and seem to say, 'you need not pass laws for my protection,—you will never uproot me from my mountain retreat.' I wondered sometimes whether the Virginia Creeper, or this beautiful fern, would have the mastery. One bench of rock projecting out from two perpendicular cliffs was just one mass of *Lygodium*. It was impossible to separate the plants, they were so entwined and twisted and matted together."

During recent years, renewed interest has been taken in vegetable morphology,—or that section of botany which treats of the manner in which the various parts of plants are developed. Assuming that a few cells uniting to form leaf-blade is the earliest condition of a plant,—all subsequent conditions, even to the mature seed, may be regarded as modified leaf-blades. These lessons are often well illustrated by the complete pictures of our native flowers given in this work, and few have been more instructive than the fern here portrayed. The manner in which the fruiting portion has been evolved from the pinnæ can be clearly traced. It is also in evidence that the whole of the fertile frond is but a barren frond in a condition of metamorphis. But it is not often that any plant will go so far as to show that the rhizoma of a fern is little more than a frond, which has taken on a creeping or geotropic habit, as this indicates.

Many ferns show this to some extent. A tree fern never has a creeping rhizoma, because the stem itself might have been the rhizoma.

EXPLANATIONS OF THE PLATE.—1. Specimen from New Jersey. 2, 3 Root system showing its creeping rhizome and habit of sending up its primary rhachis. 4 Enlarged spikelet with sporangia. 5. Forked secondary frondlets, one of which subsequently becomes fertile, the other eventually disappearing.

WILD FLOWERS AND NATURE.

THE FRINGED GENTIAN.

"With thee, frail azure flower, come dreamily
The golden fading of the yellow fern,
And the sad notes of birds far through the sky
That to the sunshine of the line return.

For on these woody swells are shimmering wide
The slumberous Indian Summer's hazy beams,—
The fallen leaves all slow and silent glide
Adown the misty, blue autumnal streams.

Among the trembling aspen's amber leaves
A sobbing spirit dwells with visible sign;
And with perpetual moan the dryad grieves
In the deep shadows of her mountain-pine."

—HOWARD WORCESTER GILBERT.

SOME LAKESIDE BEAUTIES.—Among the pleasant memories of a brief trip to the Southern Adirondacks, in New York State, this summer, is one of a few hours spent on the margin of one of the mountain lakes, which are so numerous in that beautiful region. Of the many plants growing there which I had never met with in my more southern home, there were three or four which particularly interested me. One of these was *Lobelia Dortmanna*, growing in the shallow water, its tufted leaves, hollow and linear, and divided longitudinally into two cells, securely rooted several inches below the surface of the water, above which the stiff, blunt stalk stuck up with a white blossom or two dangling from near the summit. Altogether it was an ungainly looking plant; but I found myself somehow involuntarily attracted to it again and again. I found the long, white roots—a thick bunch of them to each plant—especially interesting to look at, the cells seeming to show through the outer integument, if my memory serves me. The stalks, bare save for the scanty, short-pedicelled flowers, rising above the surface of the lake, suggest a floral shipwreck, the masts still above water, but the hull submerged.

On the beach, rooted in the mud, the tiny *Utricularia resupinata* was growing thriftily, and, near by, the fragrant *U. cornuta*—the latter spurred and helmeted; but, like many a doughty warrior who makes a brave show of burnished accoutrements, with heart devoid of war. It is curious to note the almost complete absence of bladders from the roots and leaves of these plants, which, unlike so many of their kindred, root firmly in the soil, and generally in unsubmerged ground. Did bladders once exist, losing their occupation, and hence their absence, when the plant took up its habitation on terra firma? Or were the bladder-bearing species once like them, bladder-less, and taking to the water, have since became bladder-bearers to fit them to their new home?

At another spot, the sandy beach was twinkling with the bright, little yellow stars of *Ranunculus reptans*, the plant bending itself into bows, and rooting and doing it over again, until it might pass as a vegetable contortionist. But most beautiful of all, in my eyes, was a colony of *Polygonum amphibium*, floating close to shore. It seems to me this plant, though not uncommon, I believe, is deserving of a good word, and of encouragement by growers of aquatic plants. The gracefully formed leaves lie flat on the water, and from their midst arose the spikes of little rosy flowers, riding upright on the lake, and seeming fairly to *glow* like small torches, the effect of brightness being heightened by the exserted styles and stamens, which stood out on all sides of the spike, not unlike rays from a light.

C. F. SAUNDERS.

GUM IN THE NESTS OF THE CHIMNEY SWIFT.—Mr. Willard N. Clute, Binghamton, New York, says:

"On page 125 of the present volume of the MONTHLY, the statement is made that the nest of the Chimney Swift is stuck together with vegetable gum. Will you not state, through the magazine, upon what authority this conclusion is based. It was a surprise to me, and though I may be mistaken, I find that the principal ornithologists are with me in thinking that the glue for the nest is secreted by the bird itself. The latest editions of Thomas Nuttall's work say the material is secreted by glands in the bird's stomach; while Oliver

David, in the 'Nests and Eggs of North American Birds,' says, 'the glue is a sort of saliva that is secreted by glands in the side of the bird's head, and instances are on record where a nest, torn from a brick wall, brought pieces of the brick with it, so tenacious was the glue.' All the works on the subject that I consulted said the glue is of animal origin ; and one ventured the remark that it is almost identical with the material of the edible swallows nests. The Chimney Swift very seldom, if ever, alights on trees, fences or houses. All its food is gleaned in flight, and even the sticks which compose the nest are broken off from dead branches as the bird dashes through them. It would seem, therefore, that the vegetable glue theory would be hard to prove ; and something further on the subject would, I am sure, interest every reader of your magazine."

Audubon is probably the originator of the notion that the gum used is secreted by the bird. But the man who would draw sketches of fictitious fishes, and give them to another naturalist as a joke, knowing that they would be published as genuine creatures, cannot be regarded as a conscientious naturalist. This must be said with regret, considering the great work he undoubtedly accomplished. Again, it must be said with regret, that a statement like this, once started, is usually adopted without re-examination by subsequent book makers ; and too often purposely changed a little to make the story appear original. Even as quoted by Mr. Clute, one author "finds" the glands in the "stomach," the other "finds" them "in the side of the bird's head." It would seem from these statements that the bird must be glandular all over.

The assertion may be ventured that no anatomist ever found these glands in the bird anywhere. If so, the fact has not been placed on record.

On the other hand, a nest was exhibited before the Academy of Natural Sciences of Philadelphia, many years ago, and carefully examined by the naturalists present, in which lumps of the gum had not been dissolved. It was found to be vegetable gum, and not animal gum—gum from the cherry tree, without question, the fact could not be disputed, and the Audubon "secretion" story was at once dissolved.

Again, our correspondent is correct in the conclusion that the gum in the nest is almost identical with that found in the edible nests of certain swallows, for that has been also ascertained to be vegetable gum,and to be obtained from certain species of marine algae, brought from long distances.

POTENTILLA FRUTICOSA.—Mr. T. S. Gold, Secretary of the State Board of Agriculture of Connecticut, sends the following caution :

"I note your recommendation of the *Potentilla fruticosa* as a shrub for cultivation. It is well known in Litchfield County, Conn., and Berkshire County, Mass., as the most noxious plant that exists within our knowledge. It covers, and has rendered valueless, thousands of acres of our strong, moist pasture land. This has all come to pass within my memory. It was rarely seen in my boyhood. The U. S. Dep't of Agriculture has recommended it for planting, and the farmers have protested and derided the whole thing time and again. If you want to destroy a good grass farm in a mountain region, start a colony of 'Goshen hardhack.' Plants free, with signal of caution."

It is remarkable how some plants seem to assert themselves in special localities. There are few plants more widely distributed by nature over the face of the earth than this same *Potentilla fruticosa*,—but no complaint of its dominancy over other plants comes from any part but this small corner in its wide domain. In other sections, another "Hardhack," *Spiræa tomentosa*, crowds out even the "Goshen Hardhack."

THE DOGWOOD IN THE SOUTH.—Miss Pinckney, writing from Charleston, South Carolina, under date of April 15, describes a scene in a forest where the Carolina Jasmine has run over a dogwood, *Cornus florida*, and the rich yellow of the Jasmine, and the white bracts of the dogwood, blooming together, make a charming picture. She describes it as a scene, once enjoyed, a never-to-be-forgotten one.

ECHINOCACTUS POLYANCISTRUS. — A Californian correspondent writes in praise of the *Echinocactus polyancistrus*. MEEHANS' MONTHLY recently gave an illustration of this species, and the reader can readily appreciate the praise accorded it.

THE VIRGINIA CREEPER.—In the general make up of the grand autumn coloring for which American forest scenery is so famous, the Virginia Creeper, *Ampelopsis quinquefolia*, is often an important element It is in many respects a much more charming plant in every way than the Japan Ivy, *Ampelopsis Veitchii*, which is popular chiefly because of its ready adherence to walls,—the Virginia Creeper sometimes falling off.

But its greatest pride is in its native woods, when it has had a chance to run up the trunks of trees, and cover the otherwise naked main branches of its sturdy supporters. The winey pink and golden tints often add a deeper brilliancy to the trees of the forest's own gay foliage.

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THE VIRGINIA CREEPER IN AN ILLINOIS FOREST.

CAN CATS COUNT?—A friend has several cats which have been taught to make their homes in a barn. One of the workmen in the establishment has been for a number of years in the habit of bringing food from his house, after every dinner time, for these cats. A remarkable fact is that they go from the barn to the entrance of the gate property always about fifteen or twenty minutes before the workman makes his appearance. Just how they come to learn this exact time of day is not clear, although it goes to show that these animals have reason and judgment to some extent. Strange to say that although this has been going on for several years, the cats do not seem to know that every seventh day is Sunday, and that the workman does not make his appearance at the grounds on that day, yet regularly every Sunday, for all these many years, they come to meet him, only to be doomed to disappointment. It would seem from this that cats have not the power to count, or they surely would be able to know by this time that there is a seventh day when they would be doomed to disappointment in their daily meal.

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INTENTIONAL SECOND EXPOSURE

A Twin Peach.—The point has been made in Meehans' Monthly that what are often passed over as mere curiosities or monstrosities in the vegetable kingdom are often special lessons which Nature spreads before us, to teach us the manner in which she usually performs her regular operations. The twin peach, which is illustrated on page 191, gives just such an interesting lesson. Taking an apple we find that it has five cells. The inside surface of these cells is smooth and somewhat bony, just as is the inside of a peach-stone. But there are more than one seed in the apple cell,—though in a peach cell,—or we may say "stone,"—there are often two, and sometimes three, kernels. It may be said that the peach-stone is the equivalent of one cell in an apple. When nature makes species she often does it by simply suppressing parts that are developed in others. And this is just what occurs when Nature makes a peach. Four of the five cells we have in the apple are abortive, and one only is developed. But the power to produce the suppressed cells is still there; and it is sometimes exercised. In this twin peach this has been done. Two carpels have come to perfection. What is known as the suture in the peach is the line where the original leaf which forms the carpel is folded. This lesson is sometimes better taught in the case of the double-flowered peaches. In these the usual stability has already been disturbed by the passage of stamens back to petals. The carpellary system also becomes disturbed. Double-flowered peaches occasionally fruit, and in these cases there are always two, and sometimes three carpels brought to perfection. The writer has seen four; but the fourth very small. The fruits of these double-flowered monstrosities are tough, and the stones open out of dryish shells, like the almond,—and we see by this another illustration of a proposition often taught, that a peach is but a more highly developed almond. We are glad to take these opportunities of initiating our readers into the great mysteries of Nature. It is where much of the pleasures of botany and gardening come in.

Wild Flowers and Gardening in Georgia.—Mr. J. H. Leffler, Tallapoosa, Ga., gives the following sketch of gardening in his section:

"This place, of about 3,000 residents, is located some 65 miles west of Atlanta, on the railroad from there to Birmingham, Ala., and is rapidly settling up with northern people, who come here for health and business both, the grape industry being so far the leading one. There are, to a man from the far north, of short residence here, like myself, a good many curious, amusing and pleasing sights to observe down here. To see, on my land, a wild grapevine running up and over the top of a wild seedling peach tree, loaded down so that one cluster crowds the other over the vine, is a wonderful sight to me. Close by in the vineyard (belated beyond cultivation) is a species of *Passiflora*, with fine, large light-blue flower; bearing green, smooth seedballs about the size of an apple, which are said to be edible. The Morning-glories (*Convolvulus major*) are growing wild down here, of same size, colors and markings as those bought from the seedhouses; but people are training them up to cover their porches, the same as in the north. These *Convolvulus* keep the *Passiflora* company in good soil; and some of the newly planted Niagara and Concord grapevines had a hard time for their existence between being smothered by the large growing *Passiflora* and the tight-gripping *Convolvulus*, both encircling the tender shoot up along the stake, both striving for the mastery. Of the many nice and interesting wild flowers, I notice a good perennial phlox; and a large flowering, pure, yellow *Coreopsis* is found everywhere. Blackberries, of which this country is overrun on good ground, or along fences, have bent over with their loads of fruit. So are fruit trees of their kinds. But the grapevines, both wild and cultivated, are loaded down with clusters of fruit in gardens and vineyard as I have never seen anything like before."

The Passion Flower referred to, *Passiflora incarnata*, was beautifully in bloom in the conductor's garden when the letter arrived,—and gave some impression of the beauty Mr. Leffler describes. Though called in catalogues the "hardy Passion Flower," the roots are occasionally killed in severe winter. The apple-like fruit is edible; though it has no strength of character. What the Coreopsis is supposed to be, is a very beautiful species, often seen in gardens, and will be the subject of the next colored plate.

GENERAL GARDENING.

OCTOBER.

When comrades seek sweet country haunts,
By twos and twos together,
And count like misers, hour by hour,
October's bright blue weather.

O suns and skies and flowers of June,
Count all your boasts together.
Love loveth best of all the year
October's bright blue weather.

—Helen Hunt Jackson.

Common Names of Plants.—Scientists generally hold that in speaking of plants their scientific names only are of use; while many who love flowers, and know considerable about their haunts and habits, persist in holding to the common names. Most of us, I believe, have a liking for the common names when they are appropriate, as bloodroot, daisy, leatherwood, goldthread and many others. Indeed there is scarcely a common name which study will show to be devoid of interest. The properties and characteristics of a plant; its uses in medicine and surgery; its supposed connection with gods, heroes, fairies, saints and the people of the under world—all these are revealed in the common names of plants. Perhaps it has not occurred to those who would still retain the every-day names for plants, that it is possible to combine them with the scientific ones. The ornithologists have settled this in regard to the birds by giving each a common name in addition to the proper scientific one. Thus a bird can be mentioned by either one, and the hearer be able to understand. A list of the plants could be arranged in the same manner, doubtless with good results. W. C.

Most botanists recognize the desirability of acceptable common names. Hooker's "Botanical Magazine," in describing a new plant, always coins a common name for it. Dr. Gray used to do the same. But possibly no common name, as so suggested, ever became common. The common people like to make common names for themselves. It is the scores of common names for the same thing that make trouble.

The Early Shedding of Leaves.—A Philadelphia correspondent says:

"A friend of mine has a *Tecoma radicans* growing over her house, and is a good deal troubled by its shedding its leaves, which for some days past have been falling off in showers. I enclose a few leaflets, and thought I would ask you whether there is anything specially the matter, or whether if we keep patient, it will all come right again."

The leaves indicated the attack of a minute fungus near the base of the petiole. The appearance is similar to that which afflicted Norway Maples in 1894. But they seem free this year. It may not occur again,—but there is no telling when these pestilential microbes undertake such tasks. There seems no practicable precaution,—because we do not know when to expect them.

Good Roads.—When travelers go to Italy, they are struck with amazement with the remains of ancient roadways, which they tell us are evidently far superior to the roads which we, in modern times, construct. Those who are interesting themselves in the history of the Peruvians, find precisely the same thing to admire. The remains show that their roads, even in these days of engineering, we should think almost impossible to build; and it is believed that some of these first-class roads extended for many hundreds of miles. Even sheet asphalt, or bituminous cement of some kind, was used for surfacing.

Scale on Kilmarnock Willow.—A correspondent from Scranton, Pennsylvania, sends samples of Kilmarnock Weeping Willow, completely covered with the mussel-shell scale, and asks the remedy. The weaker branches may be cut out and burned,—those left can only be killed by some oily solution. Oil itself will not mix with water; but if the oil be first mixed with soap, this difficulty is removed. This Kerosene Emulsion, as it is termed, is usually effective against all scale insects.

DESTRUCTION OF RODENTS.—Osage Orange hedges, and hedges of Honey Locust, are often ruined in severe winters by the work of field mice or other gnawing animals. In California, a wicked creature, the gopher, is equally destructive. The Californians get rid of the creatures by placing a few crystals of strychnine carefully inside of a raisin, and then putting it in the runs made by the animal. They eat and die. In the East, for field mice, peas are treated in the same manner with arsenic. The peas are first soaked, so as to render them soft, and arsenic placed inside.

BUDDED ROSES.—The stock employed by most florists and others, on which to graft roses, is known, commercially, as the Manetti. This is increased by cuttings. Those who understand, critically, the management of roses, find much satisfaction in these grafted plants. They grow much more vigorously, and have finer flowers on these stocks than on their own roots,—that is to say, in a general way, this is true. Unfortunately, rose stocks raised from cuttings have a great tendency to throw up suckers from their underground buds, and unless one is very well informed in rose culture, these suckers are apt to be mistaken for parts of the budded plant, and eventually grow so strong as to draw all the nourishment away from the graft. It is no uncommon thing to see what was originally a bed of beautiful roses consist of nothing at all but a mass of Manetti plants. In the Old World, the stocks are raised from seed. The common wild rose is *Rosa canina*, and is employed for the purpose of grafting, and is commonly called the Dog Rose. These throw up suckers occasionally, and especially if the kind grafted on them is a weak growing variety; but the foliage is so different that any common observer can tell it from the garden rose, and therefore they are easily observed and detached. Unfortunately, this Dog Rose has not been found well suited to the American climate, and only the Manetti is usually employed for stocks.

GROWING WALNUTS FOR TIMBER.—A correspondent from Kentucky desires to know the best distance to plant trees with a view to making timber trees.

It is a fact that the raising of timber in our country has never received the careful attention, from a practical point of view, that it should have. In the Old World, where forestry is made a regular business, the thinning of plantations is a prominent feature. Trees are planted comparatively thick, at first, and a thinning takes place, after a few years, for hoop poles. When they get a little larger, another thinning may occur for hop poles or for poles for similar purposes. As they get larger, other thinnings occur for various uses; but, in our country, it is very doubtful whether any work of this kind would be profitable. Labor is too expensive, and again there is difficulty of getting rid of the brush. In the Old World, where the climate is damp, there are no forest fires. In our dry climate, dead brush is too dangerous, and, before we know it, the whole forest goes up in smoke. Now, if we planted at once, at the distance to which we expected the trees ultimately to reach, they would branch out too low, and we would get short, stumpy trunks of little value. If we planted them comparatively thick, they would run out tall and straight; but, by being thick, the under-branches die, and make the dead brush-wood which we try to avoid in order to be secure from forest fires. Possibly the best thing for us to do, in our country, in the midst of all these difficulties, is not to plant as thickly as they would do in the Old World, nor so wide apart as to encourage side branches. Possibly about 20 feet apart would be the best thing under all circumstances.

THE SIBERIAN SPRUCE.—Possibly the finest specimens of the Oriental or Siberian Spruce in the Country are in the vicinity of Philadelphia, where there are occasional specimens that have been planted forty years, and are at least forty feet high. It has a much closer habit of growth than the Norway Spruce, and keeps its beauty longer than that species. The Philadelphia ones have been cone-bearing for several years, and have had male flowers many more. The male flowers are usually of a bright red, and as the leaves are of a very dark green, give it a beauty few coniferæ can aspire to.

The specimen illustrated is from the Pinetum of Mr. Josiah Hoopes, of West Chester, Pennsylvania, author of the "Book of Evergreens." He says: "The one in the picture on the right is *Picea obovata*. *Picea orientalis* is on the left. They were planted forty years ago, and have been bearing cones for several years. There is little distinction between these two species, though the cones of *Picea obovata* are more obovate, as its name implies."

This spruce grows further north than any other coniferous plant,—unless, possibly some junipers may once in a while straggle up. Mr. William E. Meehan, of the original Peary relief party, saw one of these—for it seems difficult to decide which,—the most Northern of all the coniferæ in that part of Greenland searched by them.

We have come to the use of the changed names of *Picea* for the spruces, and *Abies* for the firs, with much regret, as it is found almost impossible in the nursery trade to appreciate the change. Disputes about "getting the wrong plants" are continuous, although it is twenty years since the effort at change,—and all because Linnæus did not understand the old Roman writer, Pliny. We shall soon learn that some ancients did not call the sun "he," or the moon "she," and the whole English literature must be upturned accordingly.

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THE SIBERIAN SPRUCE.

INTENTIONAL SECOND EXPOSURE

THE GOAT WILLOW.—One of the most beautiful of spring-flowering shrubs, of comparatively large growth, is the male form of the Goat Willow, *Salix caprea*. Before the frost is hardly gone, the large ovate spikes of yellow anthers make a brilliant show. In addition to its good appearance, it has a fragrance which is agreeable to most persons. The female form is far less handsome. What is known as the Kilmarnock Willow belongs to this species,—this being the female form, of the same species, which has assumed a weeping habit. This is almost destitute of fragrance. Considering the great beauty of the male form, it is rather surprising that it is not more generally employed in ornamental gardening. The weeping variety of the female form is grafted on the male, and very often the grafted portion dies away, leaving only the stock living, and it is chiefly from these stocks that the male plants, occasionally seen, have been distributed, for there has been very little demand for the male plant directly from American nurseries.

PRUNING TREES AT TRANSPLANTING.—It should not be forgotten that the branches of trees have varying degrees of vital power. Strong, vigorous, healthy branches would endure unfavorable circumstances when the weaker ones would give way. In growing trees, it is always the weaker wood which we find among the dead branches. In transplanting a tree, we want all the branches that are full of life and vigor, and not those that are already half-dead. The practice generally followed, therefore, of shortening back the strong, vigorous branches, and leaving the half-dead ones, is a mistaken course. If all the half-dead branches were cut away, and the stronger ones left without any shortening, transplanting would often be more successful than it is.

DISEASE IN A SECKEL PEAR.—A correspondent says that some Seckel Pear trees, planted last spring, pushed into leaf freely; but subsequently the leaves turned black, and there were occasional black patches on the younger shoots. This usually comes from the attack of a minute fungus, perhaps allied to the fungus which causes the more serious disease known as "Fire-blight." It was once called "Frozen sap blight." It is now known that fungus, and not frost, is the author of the trouble. Usually, a severe pruning, so as to force out a strong growth, brings complete relief. Washes of some fungicide, to be applied after the pruning, have been recommended, and some say with good results, though it is difficult to understand how any thing applied externally can reach inside so as to affect the plant's structure.

RAMIE.—There is no question about the value of the fibre of the *Bœhmeria nivea*, commonly known as "Ramie." The finished article prepared from it rivals many lines of silk or satin, and could be produced at half the cost, if only a satisfactory decorticating machine could be invented. There have been many futile attempts; but it is now said that an entirely satisfactory machine has been brought out in New Orleans. It will be welcome news to southern land owners, where Ramie thrives so well.

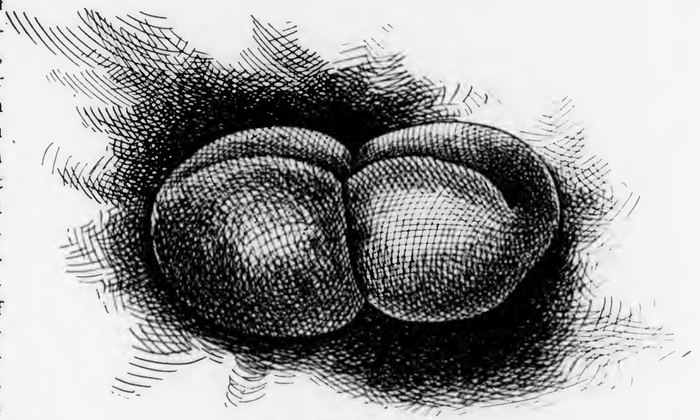
THE CORN FLOWER.—The pretty blue Centaurea which comes from Germany, and used in such large quantities in florists' decorations, is sold as the German Corn Flower; but it appears that the whole family of *Centaurea* is now getting the name of "corn flower" from the Germans. Our pretty Texan species, *Centaurea Hallii*, is described in German catalogues as the American Corn Flower.

DECIDUOUS SHADE TREES FOR THE SOUTH.—Mr. James Stewart, Memphis, Tennessee, after a good word for the *Magnolia grandiflora*, and the necessity for good nursery trees in order to get success in planting them, remarks that good deciduous street trees may be found in the Maiden-hair Tree, the Sterculia, and the Texas Umbrella, or China-tree,—the last especially.

PLANTING EUCALYPTUS TREES.—Inquiries still come occasionally as to the desirability of planting extensively the various species of *Eucalyptus* or gum trees of Australia. It is well to repeat that they succeed only where frost is unknown. Wherever an orange will thrive in the open air all the year round, the gum trees may be planted. In our country they succeed well only in Southern Florida and the Southern part of California.

PENCILING ON ZINC LABELS.—An ordinary pencil mark on zinc is in a measure indelible. The writer saw recently a zinc label on which the plant's name had been written, with an ordinary led pencil, thirty years ago, and, after a little of the oxide had been rubbed off, the name was as legible as if it was just written. For permanancy, where no illegibility is desired, nothing can be more durable.

WINTER GARDENS IN AMERICA.—In Australia the most beautiful and singular flowers are in bloom during what is known as our winter season. When brought to this country they still retain their habits of flowering in the winter months. A house devoted to these plants in some of our public grounds would be one of the greatest and most popular of floral attractions. Attempts have been made, in various parts of our country, to establish these Australian houses, but few of them meet with success. It requires a peculiar cast of horticultural knowledge and skill to manage them well, on account of the distaste of these plants for our American summer climate. It would require long arbors to give them the necessary shade and protection in summer time; but this ought not to be any serious difficulty. It may be said that when the right man comes along, and finds the right place for his abilities, the many beautiful species of *Epacris*, *Acacia*, *Erica*, and other similarly interesting things, will find a good, successful home among us. Plants from the Cape of Good Hope have also this habit of winter flowering, and when an Australian house is spoken of,—in other terms, a winter garden,—the plants of the Cape are included in the idea.



A TWIN PEACH.—SEE PAGE 186.

DESTRUCTION OF WEEDS.—Mr. J. M. Wiley, Blacklick, Indiana Co., Pa., writes of the common "Live-for-ever," *Sedum Telephium*, having invaded his farm to a troublesome extent. He finds only salt in large quantities will kill it. He desires to know if the plant can be put to any good use,—or what will easily destroy it.

It has no special value. It can be much more easily destroyed than many people believe, in these cases, by employing boys to pull it out, after a rain, as early in spring as it will pull without breaking. A few will follow, which should be again pulled when strong enough. It is barely possible a few will appear the following spring, when a few hours more will settle the business.

The most persistent and troublesome weed can be surely destroyed, if we prevent it from maturing leaves for a single season.

PARSLEY FOR ORNAMENT.—A lady of our acquaintance, who has a small conservatory, takes up parsley roots in the fall of the year, and plants it in boxes or pots, introducing it into the conservatory as soon as plants are stored for the winter. Its effect, when mixed with flowering plants, is extremely beautiful, and the lady adds, with a twinkling of the eye, that there is no more reason why she should not grow her own parsley for the decoration of her dinner table, than that she should not grow her own flowers in the same conservatory for the same purpose. Certainly, beauty and utility can never be more ingeniously combined. Some other vegetables might serve the same purpose.

SIGOURNEY SQUARE, HARTFORD, CONN.—It is gratifying to note the increasing attention given by city governments, in providing small parks and open spaces for the people, in advance of the rush for bricks and mortar. A good correspondent sends the following account, from a local paper, of a recent move in Hartford, Conn., which city has already fulfilled some of its obligations to the citizens in this respect :

"The new west side section of the city, which has recently been opened up by the Garden and Ashley street trolley line, will be the first in the city to derive a marked benefit from the new order of things made possible by the park department amendment to the city charter. It has been a part of the plan of the old town farm committee, in dividing up that tract into resident streets and lots, to reserve the square, some 350 feet on all sides, bounded by Sigourney, Ashley, May and Sargent streets, as a park or square. Now that the laying out of such a square in an ornamental manner is justified by the care that the square will receive at the hands of the new park commissioners, it has been decided to make it a forest garden of trees and hardy shrubs.

CORNELIAN CHERRY.—SEE PAGE 194.

The old town farm committee has made a contract with the Shady Hill Nursery Company, of Boston, whereby its landscape engineer, Mr. Parker, will lay out and develop the square in an artistic and beautiful manner. Melvin H. Hapgood, the architect, has been greatly interested in this matter, and it is largely at his suggestion that the square will take the form of a forest garden, instead of a mere square plot of lawn, as at first proposed.

The scheme, as outlined, provides, in addition to the usual sidewalks about the square, for the setting of a row of English Lindens, a tree but little known in this city, although there is one beautiful specimen on Bushnell Park, on the entire outer edge of the square, the trees to be twenty feet apart, with the ultimate intention of cutting out alternate trees as they grow large enough. The natural rise of ground on the west side of the square will be embellished with a growth of hardy native trees, maples, tulips, elms and Paper Birch, with a clump of poplars, rapidly growing trees, to furnish an effect until the other trees have more or less matured.

The arrangement of the corners of the park will be something entirely different from that of any park in the city, the northwest corner having been provided for in the scheme of the forest trees mentioned above. The southwest corner will have two beds of handsome Japanese evergreen shrubs, and the ground underneath will be planted with a low-running evergreen vine. The southeast corner will have beds of rhododendron and Mountain Laurel, the ground underneath being covered with purple flowering myrtle; while just north of the corner will be a garden of deciduous shrubs, including Japanese roses, hydrangeas, snowballs, spiræa and other well-known hardy blooming shrubs. The northeast corner will be adapted for a winter exhibit of color in shrubs, and will be planted with Red Dogwood, the Russian Golden Willow, the Blue Willow, the White Willow and shrubs that bear heavy clusters of bright red berries.

The square will have two winding paths from corner to corner, which will pass gracefully through the section devoted to the lawn. Although the contract for the trees and shrubs and general design has been let to Boston parties, the work will be done by local firms. It is to be completed by June 1."

It has been found that though masses of shrubbery do not like to grow in grass, the plants like trailing vines for the cool shade.

MAGNOLIA ACUMINATA.—Aside from the *Liriodendron* or Tulip Tree, few trees attract more admiration than a well-grown specimen of the Cucumber Tree, *Magnolia acuminata*. It occasionally fails in transplanting. This chiefly arises from being set too deeply in the ground. Few trees miss atmospheric air at the roots more than this. It is easily smothered by heavy soil.

THE GERMAN IRIS.—Mr. F. Brendel, Peoria, Ill., remarks :

"*Iris germanica* is not an exclusively German plant, as is said in your July number. It occurs in France as well as in Southern Germany, and in all Southern Europe,—even in South Russia."

The correspondent who originally suggested the paragraph, on which Mr. Brendel comments, is too good a botanist not to know that the German Iris is not exclusively German. Possibly he would have used the word "essentially," instead of "exclusively," with closer thought. The plant goes by the name of "German Iris" in all nursery catalogues.

ACTION OF WATER PLANTS IN WATER.—What is known in the Old World as the American Water Weed,—that is to say, *Anacharis Canadensis*, was for a long time regarded as one of the worst pests introduced into English waters. Dr. Brandes, of the German Health Commission, is said to have made a great discovery in connection with this supposed pest, mainly that it is a great purifier of water. He says it will destroy all the microbes that produce typhus, cholera and malaria ; and so great is the estimation in which, through the opinion of Dr. Brandes, the plant has received, cuttings have been sent to the German Possessions in the Congo, Java and other portions of the world that are under German influence, in the belief that it will purify water, and in that way become a sanitary agent; but this has long been known in connection with all water plants. The great help to the purification of water is oxygen,—and plants give off oxygen as well when growing under water as when growing in the atmosphere. It is for this reason that those who cultivate fish or other animals in aquariums have to have plants in order to maintain healthy animal life,—the fish giving off carbonic acid, while the plant takes in the carbonic acid and throws off oxygen. It is for this reason that water that gets a chance to stand a while in reservoirs where there are water plants at the bottom, is helped in its purification.

NEW OR RARE PLANTS.

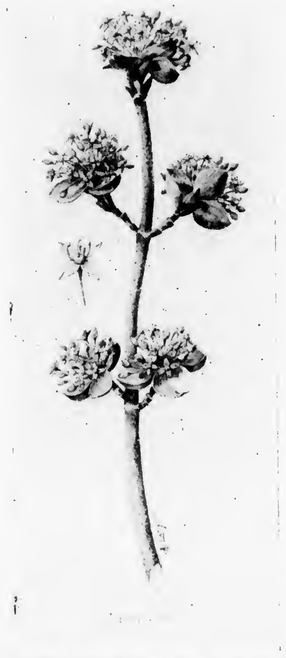
DOUBLE DAY-LILY.—One of the best known herbaceous plants is *Hemerocallis fulva*, the Brown Day-Lily. It is a native of Asia ; but in the course of ages has made itself a home in Europe, and bids fair at no distant date to be an accepted, naturalized citizen of the United States. Though it has never been known to perfect a seed vessel in the United States, should a plant get into a waste corner from somebody's garden, it persists indefinitely ; and as it makes a half-dozen or more off-sets every year, a large clump is soon formed. It is quite as pretty as the famous Orange Lily,—and indeed makes a greater show.

THE DOUBLE HEMEROCALLIS FULVA.

For a large mass of color to be seen from a distance, there is nothing fills the requirement better than this. Just why it gets the name of "Day Lily" is not clear. But there is no accounting for popular names. Recently there has come to us, from the Old World, a double variety, an illustration of which is given herewith. It does not grow as tall as the single variety ; but the flowers seem larger, and the beauty more impressive. Another good point is that it comes into flower just as the single one is going out, thus prolonging the flowering season. All in all it is one of the best

SIGOURNEY SQUARE, HARTFORD, CONN.—It is gratifying to note the increasing attention given by city governments, in providing small parks and open spaces for the people, in advance of the rush for bricks and mortar. A good correspondent sends the following account, from a local paper, of a recent move in Hartford, Conn., which city has already fulfilled some of its obligations to the citizens in this respect :

"The new west side section of the city, which has recently been opened up by the Garden and Ashley street trolley line, will be the first in the city to derive a marked benefit from the new order of things made possible by the park department amendment to the city charter. It has been a part of the plan of the old town farm committee, in dividing up that tract into resident streets and lots, to reserve the square, some 350 feet on all sides, bounded by Sigourney, Ashley, May and Sargent streets, as a park or square. Now that the laying out of such a square in an ornamental manner is justified by the care that the square will receive at the hands of the new park commissioners, it has been decided to make it a forest garden of trees and hardy shrubs.



CORNELIAN CHERRY.—SEE PAGE 194.

The old town farm committee has made a contract with the Shady Hill Nursery Company, of Boston, whereby its landscape engineer, Mr. Parker, will lay out and develop the square in an artistic and beautiful manner. Melvin H. Hapgood, the architect, has been greatly interested in this matter, and it is largely at his suggestion that the square will take the form of a forest garden, instead of a mere square plot of lawn, as at first proposed.

The scheme, as outlined, provides, in addition to the usual sidewalks about the square, for the setting of a row of English Lindens, a tree but little known in this city, although there is one beautiful specimen on Bushnell Park, on the entire outer edge of the square, the trees to be twenty feet apart, with the ultimate intention of cutting out alternate trees as they grow large enough. The natural rise of ground on the west side of the square will be embellished with a growth of hardy native trees, maples, tulips, elms and Paper Birch, with a clump of poplars, rapidly growing trees, to furnish an effect until the other trees have more or less matured.

The arrangement of the corners of the park will be something entirely different from that of any park in the city, the northwest corner having been provided for in the scheme of the forest trees mentioned above. The southwest corner will have two beds of handsome Japanese evergreen shrubs, and the ground underneath will be planted with a low-running evergreen vine. The southeast corner will have beds of rhododendron and Mountain Laurel, the ground underneath being covered with purple flowering myrtle; while just north of the corner will be a garden of deciduous shrubs, including Japanese roses, hydrangeas, snowballs, spiræa and other well-known hardy blooming shrubs. The northeast corner will be adapted for a winter exhibit of color in shrubs, and will be planted with Red Dogwood, the Russian Golden Willow, the Blue Willow, the White Willow and shrubs that bear heavy clusters of bright red berries.

The square will have two winding paths from corner to corner, which will pass gracefully through the section devoted to the lawn. Although the contract for the trees and shrubs and general design has been let to Boston parties, the work will be done by local firms. It is to be completed by June 1."

It has been found that though masses of shrubbery do not like to grow in grass, the plants like trailing vines for the cool shade.

MAGNOLIA ACUMINATA.—Aside from the *Liriodendron* or Tulip Tree, few trees attract more admiration than a well-grown specimen of the Cucumber Tree, *Magnolia acuminata*. It occasionally fails in transplanting. This chiefly arises from being set too deeply in the ground. Few trees miss atmospheric air at the roots more than this. It is easily smothered by heavy soil.

THE GERMAN IRIS.—Mr. F. Brendel, Peoria, Ill., remarks :

"*Iris germanica* is not an exclusively German plant, as is said in your July number. It occurs in France as well as in Southern Germany, and in all Southern Europe,—even in South Russia."

The correspondent who originally suggested the paragraph, on which Mr. Brendel comments, is too good a botanist not to know that the German Iris is not exclusively German. Possibly he would have used the word "essentially," instead of "exclusively," with closer thought. The plant goes by the name of "German Iris" in all nursery catalogues.

ACTION OF WATER PLANTS IN WATER.—What is known in the Old World as the American Water Weed,—that is to say, *Anacharis Canadensis*, was for a long time regarded as one of the worst pests introduced into English waters. Dr. Brandes, of the German Health Commission, is said to have made a great discovery in connection with this supposed pest, mainly that it is a great purifier of water. He says it will destroy all the microbes that produce typhus, cholera and malaria ; and so great is the estimation in which, through the opinion of Dr. Brandes, the plant has received, cuttings have been sent to the German Possessions in the Congo, Java and other portions of the world that are under German influence, in the belief that it will purify water, and in that way become a sanitary agent; but this has long been known in connection with all water plants. The great help to the purification of water is oxygen,—and plants give off oxygen as well when growing under water as when growing in the atmosphere. It is for this reason that those who cultivate fish or other animals in aquariums have to have plants in order to maintain healthy animal life,—the fish giving off carbonic acid, while the plant takes in the carbonic acid and throws off oxygen. It is for this reason that water that gets a chance to stand a while in reservoirs where there are water plants at the bottom, is helped in its purification.

NEW OR RARE PLANTS.

DOUBLE DAY-LILY.—One of the best known herbaceous plants is *Hemerocallis fulva*, the Brown Day-Lily. It is a native of Asia ; but in the course of ages has made itself a home in Europe, and bids fair at no distant date to be an accepted, naturalized citizen of the United States. Though it has never been known to perfect a seed vessel in the United States, should a plant get into a waste corner from somebody's garden, it persists indefinitely ; and as it makes a half-dozen or more off-sets every year, a large clump is soon formed. It is quite as pretty as the famous Orange Lily,—and indeed makes a greater show.

THE DOUBLE HEMEROCALLIS FULVA.

For a large mass of color to be seen from a distance, there is nothing fills the requirement better than this. Just why it gets the name of "Day Lily" is not clear. But there is no accounting for popular names. Recently there has come to us, from the Old World, a double variety, an illustration of which is given herewith. It does not grow as tall as the single variety ; but the flowers seem larger, and the beauty more impressive. Another good point is that it comes into flower just as the single one is going out, thus prolonging the flowering season. All in all it is one of the best

INTENTIONAL SECOND EXPOSURE

additions to the list of good, hardy herbaceous plants that has come to us for a good while.

THE CORNELIAN CHERRY.—Early spring flowers are always welcome. The Cornelian Cherry is one of the earliest of spring-flowering shrubs, and welcome alike for its rich, Cornelian-colored "Cherries" in summer, as for the flowers it gives us a few days after the

SNOW-DROP TREE.
Flowers white. (Reduced two-thirds).

winter snows have thawed away. It was named *Cornus Mas*, by Linnæus, as the recognized "Male Cornel" of the ancient classics.

With a few warm days the four bud-scales develop, and a head of yellowish flowers is formed. These also have a four-parted corolla, as shown in the single flower in the picture. See page 192.

Gardening has an additional interest, of late years, in the study of plant life, now so popular. In this dogwood we can see how Nature makes species! We are all familiar with the white dogwood of the woods,—*Cornus florida*, in the East, and Cornus *Nuttallii* on the Pacific Slope. We know well the four broad white bracts which lend the dogwood flower its chief charm. We see in the Cornelian Cherry the same four "bracts," only that more correctly they are the scales that protected the flowers in the winter. In the other dogwood cited, the four bud-scales, simply take a second growth, carrying, the winter portion on the apex. The "notch" on the end of the broad white "bract," is the bud-scale of the past winter. What the power is that says to the bud-scales of *Cornus Mas*, "rest when you let the flowers out," and to the bud-scales of *Cornus florida*, "take another growth, and become another species," nobody knows yet,—but it certainly is not by any law of natural selection, the struggle for life, the survival of the fittest,—or the accident of environment.

There are many reasons why this lovely shrub should have a place in any garden that can find room for it. It is still a rare plant.

THE SNOW-DROP TREE.—Among trees comparatively rare in gardens, but which deserve to be better known, is *Halesia tetraptera*, or, as it is catalogued in nurseries, the Snow-drop Tree. It will reach the dimensions of an ordinary apple tree, in time; but flowers when but two or three years old, so we may class it as either a tree or a shrub. The pure white flowers well support the popular name. The surface of the ground, under a mature tree, seems literally snow-covered when the flowers are falling. It is a native of the higher lands of Georgia and the Carolinas, and is probably hardy far to the North.

HYBRID ROSES.—Possibly one of the greatest acquisitions of recent years is the hybrid of *Rosa rugosa*, known as Madame Georges Bruant, and this popularity is chiefly on account of its free, autumn blooming. It is a continuous mass of white flowers from midsummer until frost. This has led others to look for additional hybrids. Mr. Jackson Dawson, of the Arnold Arboreteum, has raised a very interesting variety between the *rugosa* and the pretty species known a *Rosa Wichuriana*. The flowers are of a clear rose-pink color, and as large as the *rugosa;* but we do not know whether it will be autumn-flowering, as the other is.

THE HARDY FLOWER GARDEN.

PROPAGATING GLADIOLUS.—In the tuberose, and many other bulbous plants, off-sets sprout the same year, and by taking off the off-sets, plants can be easily propagated; but some plants do not show signs of off-sets, but the buds are made, though they may not push into young plants. This is true especially of the Gladiolus and others, —a large number of buds existing at the base of the new bulb. If this bulb is cut into pieces, longitudinally, every-one of these pieces will grow just as readily as the cutting out into sets of a potato tuber. As a general rule, no matter how thin these longitudinal sections may be, a bulblet will push out from the base after planting. It is in this way that the rare varieties of Gladiolus are propagated. In some cases, however, the buds do push a little the same season, and form small, grain-like bulblets. Strong bulbs can be easily raised from these bulblets. When so produced, many scores of bulbs may be raised from a single one. This is one reason why some varieties of Gladiolus are priced very low. They can be so easily produced in quantity. The rare ones are those which cannot be produced in this wholesale way, and as only a dozen or so can be produced from a single bulb, in one season, the prices are proportionately high.

LATE FLOWERING IRIS.—Since the introduction of the many species of *Iris* to flower gardens, there has been a continuous succession of flowers in this family from very early spring until fall. Among the earliest is the *Iris cristata*, of North Carolina, which opens before the frost has barely left the ground. About mid-summer, the beautiful species from Japan closes up the season. The Japanese must be very fond of this *Iris*, for there are more representations of this species in their artistic flower work than of anything else. The leaves are grass-like,—rather than sword-shaped, as in the old-fashioned *Iris*; and the petals are very prettily veined, and of many different shades. The Japanese species form a beautiful close to the *Iris* season.

FRUITS AND VEGETABLES.

TURNIP SPROUTS.—It is stated that the Swede turnip placed in comparatively warm cellars in the fall of the year will send out sprouts, which, when cooked, are equal to the best asparagus; and, in some parts of the Old World, it is becoming a regular part of good gardening to put away a few turnips for supplying the article during the winter season.

PROFITS OF SUGAR BEET CULTURE.—There is often a great deal of exaggeration in figures regarding the profits of various crops, and enormous results have frequently been given in regard to the profits of sugar beet culture. It has been given out as authoritative that the average profits in California of sugar beet culture is about thirty-five dollars per acre. This includes the interest on the first cost of the land as well as the working expenses.

VARIETIES OF CELERY.—Celery, to be good, has to be perfectly blanched, and the blanching process is accomplished generally by heaping the earth around the stalks. For this reason the short bunchy varieties of celery are more advantageous than the taller growing kinds, as requiring less labor in earthing up. It is chiefly for this reason that the thick dwarf kinds are in favor with American gardeners, as requiring less labor to produce. Some of these, however, are not nearly as toothsome as the taller varieties, and the efforts of the improver should be towards producing sweet nutty flavored varieties of the dwarfer kinds.

THE NORTHERN SPY APPLE.—Frequently, out of a number of varieties of apples in an orchard, only one or two will bear, all the others failing to produce a crop. The Northern Spy is said to be one of the apples that will frequently bear when all the others fail. This is probably owing to its blooming a little later than the others, so that the flowers get the full benefit of its pollen. The Northern Spy is also a favorite, from the fact that it usually bears an abundant crop, that is, after it once commences to bear; but the trees seldom bear when young, and the orchardist frequently has to wait several years for a crop, when other varieties have been for some time in bearing.

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INTENTIONAL SECOND EXPOSURE

THE DWARF LIMA BEAN.—A lima bean that does not need poles to run on is a great acquisition, provided it will bear as freely as when poles are used. Many doubt whether the crop would warrant the absence of pole training. Professor L. H. Bailey, of Cornell University, has given considerable attention to the subject, and finds that it is all that it is claimed to be, and that it is a valuable new type of garden vegetable. He says that it is only within the last ten years that it has been known. He gives to Henderson and Kumerle the credit of an introduction in 1889, Burpee in 1890, Wonder in 1891, and Barteldes in 1892 or 1893. It was first made known by a negro, who twenty years ago found one growing along a road-side in Virginia. In 1895, a Richmond seedsman grew enough to sell the stock of it to Henderson in 1887. Mr. Burpee's bean, however, was from a different stock, and brought to his attention by Asa Palmer, of Kennett Square, Pa. Barteldes's bean came from Colorado, and is supposed to be a sport from the old white Spanish stock. It is, of course, understood that they are all varietal forms of the old lima bean,—*Phaseolus lunatus*.

NORTHWESTELN LOUISIANA. — Col. M. B. Hillyard, of New Orleans, who has spent many years of his life in working for the growth of Southern industries, and in a disinterested manner and devotion rarely equalled, has recently issued a work on Northwestern Louisiana. In regard to gardening, he says: "In vegetables it would be absurd to attempt an enumeration. In fruits the list is endless almost in its varieties: peaches, pears, apples, quince, grapes, blackberries, dewberries, raspberries, strawberries, pomegranates, figs, Japan persimmons, plums, apricots, nectarines, Japan plums, whortleberries, Mayhaw, sloe. We firmly expect to see this State take great prominence in grape growing in the next few years. Raising early fruits and vegetables will be a matter of course in the future. Nut raising, within the next quarter of a century, may have a large place in the economies of the State. A very superior pecan has come to the front, introduced by Mr. W. R. Stuart, of Mississippi, and we have been shown by him one superior to any he has yet disclosed to the public. A pecan orchard of this superior nut is one of the best heritages one can leave children. Chestnuts, filberts, almonds, walnuts (black and white), can be successfully produced."

ASPARAGUS IN WINTER TIME.—It takes very little heat to start asparagus into growth, and occasionally it is desirable to replace beds of old plants with young ones. In this case the old roots can be taken up and placed in a cellar, or even a frame where they can be protected from frost, and the asparagus sprouts will come into use a month or two before they can be obtained from the open ground. They can be set very closely together so that a large amount of asparagus shoots can be obtained from a comparatively small space; but these roots usually are not considered of much value after one crop has been taken from them in this way. Rhubarb roots can be made to produce early stalks in much the same manner.

FRUIT GARDENING IN SOUTH AMERICA.—Among the southern nationalities, the Republic of Argentine seems particularly progressive. In all the expositions she takes a leading part in presenting her industries. In fruit gardening, especially, the Republic has made enormous advancements during the past few years. Of grapes alone, it is estimated that there are 82,500 acres in the Republic. So far, the various troubles which aggravate grape growers in other regions, have not reached them. Whether it is because the spores of these injurious microscopic parasites have not yet found their way to the country, or whether it is because the country is not favorable to their development, will have to be discovered hereafter.

THE GAULT PERPETUAL RASPBERRY.—The Storrs & Harrison Company, of Painesville, Ohio, are introducing a new black-cap raspberry, which they call the Gault Perpetual, and which they claim will continually bear through the whole fall season. The colored plate issued by the firm shows a bunch of ripe fruit five inches in diameter and some half a dozen red ones. It would appear from this that most of the fruit ripens simultaneously. Like all black-caps, the fruit is, of course, not as large as that of many raspberries of the foreign race; but the representation shows an inch across, which is very good for a variety of the black-cap class.

CHESTNUT CULTURE.—The growth of chestnut as timber for posts and rails, has always been a matter of concern to Pennsylvania farmers. A farm that had chestnut trees on it for this purpose, had always a preference. In addition to this, the nuts themselves were profitable, bringing from four to five dollars a bushel, wholesale, in the city markets. The larger variety of the Spanish Chestnut, however, would bring from six to eight dollars a bushel, and it is now getting common to graft the wild chestnut trees, with these improved varieties of the Old World stock. One of these, the Paragon, is especially popular, and it is not only a very large and good chestnut, but is a very abundant bearer.

MEALY POTATOES.—Mrs. Seliger says that every cook knows that the end of the potato by which it is attached to the parent plant is waxy in comparison with the end where the eyes are. This, she says, is the mealy end. She suggests that experiments in improving potatoes should be made with the mealy end. But there are people who do not look on mealiness as the *summum bonum* of perfection in a potato. A watery potato is bad enough; but a waxy potato is preferred by many to a very mealy one. New potatoes are always welcomed; and these are always waxy.

THE ELBERTA PEACH.—So many varieties of fruits are introduced with a great flourish only to be discarded in the course of a few years. Some kinds, however, seem to insure permanent popularity, which is a sign of their value. The Elberta Peach is one of these. It seems rather to grow in popularity—as the years roll by. It is considered the most desirable of all the yellow flesh peaches—Crawford's Yellow excepted. Possibly some of its popularity comes from its high coloring. It is one of the darkest of all, in this respect approaching a nectarine.

DWARF APPLES.—Mr. E. G. Lodeman, of Cornell University, is making a special study of dwarf Apples in connection with the general subject of Pomology. They have not been planted to any great extent, of late years. Does any reader know of good specimens anywhere?

MUSHROOM CULTURE.—Many American florists have found that they can combine raising mushroom and flowers for cutting in the same houses, and in this way make a double profit from the same amount of glass. Usually, these combined houses have been roses and mushrooms, or carnations and mushrooms; but even the vegetable growers are now finding that they can get double crops in this way. In many parts of our country, it is found very profitable to raise tomatoes under glass; and it is found that tomatoes and mushrooms go very well together.

POTATO CULTURE.—It is remarkable how long it takes good ideas to travel in the Old World. Notwithstanding it is nearly half a century since Americans began to save their potato crops by the use of Paris Green, or other washes to prevent the ravages of destructive insects and microscopic fungi, it is only within the last year or two that the practice has found its way into the Old World. A recent account speaks with surprise of a crop of potatoes being doubled in amount by spraying.

GRAFTING APPLES AND PEARS ON THE HAWTHORNE.—Fashions go and come in Horticulture as in other things, and the same idea comes up and down with every ebb and flow of fashion's tide. The apple and pear will graft on the hawthorn. They keep dwarf, and bear early when so grafted. For a few years the nurseryman sells all he can raise, then for a few years he burns them all. Just now the inquiry for them seems on the rise again—for about the fifth time during the last fifty years.

CHLOROGI.—The *Stachys tuberifera*, which was introduced under the name of *Chlorogi*, as a new vegetable, does not appear to have been introduced into our country, for all the attention that was drawn to it a year or two ago. If any one has had any experience with it, MEEHANS' MONTHLY would be glad to have a note thereof.

FRUIT CULTURE IN GEORGIA.—Mr. J. H. Leffler, of Tallapoosa, Ga., writes that fruit culture as a great business, is rapidly extending in that region,—northern settlers mainly being responsible for the great success.

BIOGRAPHY AND LITERATURE.

THE HAPPY MAN.

Who sows a field or trains a flower
Or plants a tree is more than all.
For he who blesses most is blest;
And God and man shall own his worth
Who toils to leave as his bequest,
And added beauty to the earth.

—WHITTIER.

DAISIES IN VIRGINIA.—

'And the wind may blow and the storm may fall,
But the voice of the Summer is heard in all.'

Although the Spring of '95 may be a season when the Winter's hand heavily presses on New England's heart, and spring averts the sunshine of her eyes, still the months of daisies are not far away, and I am thus reminded to call the attention of MEEHANS' MONTHLY to the following:

"Before the war there was no such flower as the daisy in Virginia. The hardy flower was a curiosity. Now the fields right around Richmond are white with them. This is especially so with the late battlefields about the Chickahominy, and wherever the Federals had encampments. An investigation shows that the seeds of the prolific daisy were brought here in the bales of hay brought by the Union army to Virginia when they were encamped near Richmond. An old battery west of the city is the spot from which the daisy began to spread."

The forgoing is an extract from a Richmond Letter of July, 1891.

That there are no daisies in Virginia except those sprung from Union seed, is a legend worth remembering for the sake of its sentiment.

"The blood-red blossom of war with a heart of fire" has been followed by real flowers—pure white blossoms with hearts of gold—which for thirty long years of peace have decked the fields of the Old Dominion. If the daisy of America is not like her modest English cousin, *Bellis*, a favorite with the poets—she has found a place in history as a beautiful memorial of a fierce and bloody strife.

In certain parts of New England, daisies are used in the greatest profusion to deck the graves of soldiers on Memorial Day. Perhaps it is the favorite flower for the purpose.

Now as to the probable truth of the story—We turn at once, very naturally, to that old Latin Botany *Flora Virginica*, published at Leyden, more than one hundred and fifty years ago, to learn if the daisy, *Leucanthemum vulgare*, is among the plants which John Clayton saw and collected.

The plant is found very readily, recorded under *Symgenssia*, class xix. (Part 1, page 101. Ed. 1,743.

Almost one hundred years after Clayton's emigration, Frederick Pursh landed at Baltimore, 1799, and spent twelve years botanizing in the United States, devoting much time to the flora of the state of Virginia. Pursh describes *Leucanthemum* (which, by the way is a long Greek word, meaning simply "white flower,") as common everywhere in our fields and meadows, and bearing large white blossoms *resembling the daisy*. (*Flora Americæ Septentrionalis*, vol. ii, 526.) We might infer from Pursh's account that the plant *L. vulgare* had not yet come to be called daisy. Chapman shows, too, that this ancient and very aggressive floral emigrant is common in other states of the south.

We have shown, for a certainty, that the daisy flourished in Virginia long, long before the late Civil War.

The search for daisies in Virginia revives the interesting fact that John Clayton, to whom we are indebted for the *Flora Virginica*, is the namesake of that delicate little plant which every lover of early wild flowers greets with a tender welcome—Spring Beauty or Claytonia.

What more charming memorial of one's life work than to descend to posterity in the name of a beautiful flower!

Spring Beauty's Latin name was bestowed by Laurence Gronovius—brother of John Frederick, editor of *Flora Virginica*.

While Pursh was in the United States, Noah Webster published (1806) his first English dictionary, he defines daisy.—A small, common flower.

MISS KATE L. HAYDEN.

Hartford, Conn.

We must always take statements like the daisy and the battlefields as we take other so-called "facts of history" with some doubt. Few of us have any idea of wide consequence in any thing that happens in our daily lives. Long after we pass away, it is discovered that something we did, proved to be important to humanity. It is only then that we look after the circumstances, when all the chances of accuracy have been lost. Most of us in advanced years have heard others tell wondrous stories that we are sure never happened. It is said of John Bartram that he had no thought or care for natural history till one day when ploughing he turned down a daisy, and picking up a flower, was so struck with its beauty, that he straightway went and bought a book on botany, and in this way was his botanical career started. If this happened at all, the daisy must have been this very "ox-eye Daisy" Miss Hayden is now telling us about.

There are many things, however, which make the story unlikely; and it is evidently constructed on a real experience in the life of the great Scotch poet Burns. But, as Miss Hayden intimates, the stories are pretty, though apocryphal; and none of us desire to have them wholly pulverized.

ORIGIN OF THE PARAGON CHESTNUT.—A paper, by an eminent authority, on the origin and character of certain varieties of the Spanish Chestnut, has the following:—"Paragon: origin uncertain,—said to have been raised, from a foreign nut, in the garden of a gentleman residing in Philadelphia." There need be no uncertainty in the history of this nut. It was raised by William L. Schaeffer, formerly President of the Girard Bank of Philadelphia, and for a number of years the esteemed President of the Pennsylvania Horticultural Society. He had a fine farm and country seat at Mount Airy, near Philadelphia. The nut was given to him, by a friend, as having been obtained from an American Chestnut Tree. It was evident, to everyone familiar with the species of chestnut, that this was a mistake. Few species are more easily distinguished than the *Castanea vesca* of Europe, and the *Castanea Americana* of our own country. Still, Mr. Schaeffer not being a botanist, and with full faith in the history of the nut as given by the friend who handed him the original, used to exhibit the fruit at the meetings of the Pennsylvania Horticultural Society as a product of the American species of chestnut, notwithstanding all these accounts Mr. H. M. Engle, of Marietta, Pa., was desirous of introducing it. He wrote to the writer of this paragraph to obtain for him grafts from Mr. Schaeffer. This was done, and the stock named by Mr. Engle the Paragon, and it was first sent out as a wonderful advancement in the development of the American Chestnut. Everyone familiar with the different species has seen that this is a mistake, and it is no longer pressed in this line. It is a remarkable variety of the Spanish Chestnut, and that is all. The grounds of Mr. Schaeffer have now been purchased for a Deaf and Dumb Institute, and the original Paragon Chestnut Tree will undoubtedly be in the way of buildings ultimately, but up to last year it was still standing there.

POISONOUS MUSHROOMS.—The daily papers of July 18 say that "The family of C. C. Newton, on the way from Marion, Indiana, to Arkansas, and encamped near Anna, Illinois, have been poisoned by eating toadstools, which they supposed were mushrooms. Two little girls, aged 13 and 17, respectively, died on Monday night, and a boy, aged 15, died yesterday morning. The mother and two other children are not expected to live."

As it is conceded that custom is the lawgiver of language, the word "toadstool" will come to be regarded as meaning a poisonous species of the Mushroom family; and that the common Mushroom, *Agaricus campestris*, will alone stand for "Mushroom."

PHILADELPHIA BOTANISTS.—The work of the botanists of Philadelphia, during the early part of the century, has left an indelible mark on the history of the science. Dr. Harshberger, of the University of Pennsylvania, proposes to collect their names and give a brief note of the life and services of each. Those are to be included who resided within a radius of sixty miles of the city.

GENERAL NOTES.

A SNOW FLOWER.—The space of MEEHANS' MONTHLY is so limited, that room can scarcly be afforded for newspaper "fakes," but the enclosed from St. Louis *Democrat* is too good to be lost. The "Professor" should next try his pen in the manufacture of a "Fire plant." The seeds could doubtless be transported by means of an ingenious contrivance for keeping kept red hot by a spirit lamp:

"One of the greatest curiosities I ever met with in my travels," said Prof. Philip L. Newman, of Cincinnati, "is the sunflower that blooms in the northern portion of Siberia, where the earth is continually covered with a coating of snow and frost. This wonderful plant shoots forth from the frozen soil on the first day of the year and reaches the height of about three feet; it blooms on the third day, remains open twenty-four hours, and then returns to its original elements. It shines for a single day, then the stem, leaves and *flower are converted into snow*. The leaves are three in number. The flower is star-shaped, its petals about as long as the leaves and about half an inch wide. On the third day the extremities of the leaves show little glistening specks, like diamonds, about the size of the head of a pin. These are the seeds of this queer flower. I was told that on one occasion, some of these seeds were gathered and hastily transported to St. Petersburg. They were there placed in a bed of snow, where they were kept until the first of the following year, when the sunflower burst forth and was greatly admired and wondered at by all who saw it."

BEAUTIES OF VIRGINIA.—A correspondent at Richmond, Virginia, who has a nursery of 35 acres in the country, and greenhouses in the city, and who thinks that with advancing years one place, and the smaller one, is enough to care for; gives the following glowing account of the natural advantages of that part of the world: "The climate is a boon to those who have cause to appreciate this great gift of Nature. Cyclones and destructive storms are not known between the Rappahannock and Appomatox. Here, in Chesterfield Co., lying between Richmond and St. Petersburg, there are no mosquitos,—soil not heavy but rather sandy,—springs of water abundant,—and few enemies to fruit trees." It certainly should be a favored region; but it would be strange if so large a country as ours could not locate paradise in more than one spot.

IMPROVED MACHINERY. — The manner in which machinery has been improved, as to save manual labor, is remarkable. In the West they have now a machine for cutting standing corn by horse-power. The horse draws a sled, with the cutter attached, through the standing rows of corn; and a man, standing on the sled, catches the stalks of corn in his arms as the horse proceeds, throwing them, when he has an armful, in the proper places for shocking. Not only is machinery used in corn cutting, but for potato digging, sorting and cutting for sets. It is chiefly because of the enormous advancement in labor-saving appliances that the prices of crops are so low.

MASSACHUSETTS HORTICULTURAL SOCIETY LECTURES.—Mere exhibitions of fruits and flowers have lost much of their novelty, and are not as well attended as in former days; but where they are co-related with instruction they are as popular as ever. The Saturday afternoon lectures of the Massachusetts Horticultural Society are said to be usually very well attended, and by many of the best people of Boston.

NATURE'S CONTRADICTIONS.—A correspondent says: "In all the articles I have read from your pen, I have never come across the peculiarity mentioned in the following article:

'Nature works in circles,
Every one agrees;
Trees grow out of doors—
Doors are made from trees.'"

COREOPSIS GRANDIFLORA

COREOPSIS GRANDIFLORA.

GREAT TICK-SEED.

NATURAL ORDER COMPOSITÆ.

COREOPSIS GRANDIFLORA, NUTTALL.—Stem slender, smooth, ascending; leaves elongated; the lowest linear-spatulate, on long ciliate petioles,—the upper ternately or one-to-two-pinnately parted, the divisions linear; exterior scales of the involucre ovate-lanceolate; rays large, four-to-five-toothed. Chapman's *Flora of the Southern United States*. See also Wood's *Class-Book of Botany*.

In compound flowers, or such as in botany we know as comprising the natural order compositæ, the eye is often as good a guide to the genus as a study of the best botanical description would be; and *Coreopsis* affords an excellent illustration of this point. It is very difficult to draw up characters that will enable the student to tell a *Coreopsis* fram a *Bidens*, or these two from neighboring genera,—and yet the collector who may be somewhat acquainted with these plants can readily decide when some novelty may or may not be one or the other. Usually the systematic botanist first notices that an uncertain plant does not look to him as belonging to something nearly related, and it is only after such suspicion that the characters are discovered that distinguish it. Before the time of Linnæus, species that we now know as *Coreopsis* were all classed as *Bidens*. They came to be distinguished mainly by the character of the seeds, these being flattish in *Coreopsis*, and somewhat four-sided in *Bidens*. But the experienced botanist could nearly decide as well by the look of the whole plant, whether it should or should not be classed as *Coreopsis*, as by examining the seed. It was the seed which suggested to Linnæus the name *Coreopsis*, this being derived from *Koris*, a bug, and *opsis*, like; the curved, flattened seed, with its two horns, being very suggestive of an insect polite people are supposed to have but little knowledge of. The English "tick-seed," is sufficiently expressive for all practical purposes. It may be remarked in regard to the supposed common names of plants, that often they are by no means common names; but names coined by the botanist who believes people want something of the kind. The author has never heard the name "tick-seed" used. Coreopsis has become almost as common as Dahlia or Verbena as an English name for the plant here described. Aside from the seed, the florets offer good distinguishing characters; but the florets of the order of composites, are generally small, and can only be distinguished well by the aid of good glasses,—and in the dry state, as in herbarium specimens, could only be used under conditions unfavorable to correct determination. The students should, however, take all opportunities of examining fresh flowers, to understand how great are the variations the florets afford. In fig. 4, in the plate, is a magnified floret of the species now described. It is very instructive to compare it with the floret of any species now included under *Bidens*.

Coming now to the species illustrated, it must be said that it is given as *Coreopsis grandiflora*, of "Nuttall," with some misgiving, though it is the kind usual in cultivation under this name, and is pronounced by able Botanists to be "certainly no other." In truth it does not accord with any other described species, though having much in common with *Coreopsis lanceolata*. The plant agrees well with Dr. Gray's description in the "Synoptical Flora;" but it does not agree with the original specimen of Nuttall in the Herbarium of the Academy of Natural Sciences, or of any gathered in Texas or Arkansas by eminent Botanists. These specimens, however, do all agree with the figure of *C. longipes* given in Hooker's "Botanical Magazine," plate 3586, and which all our botanists regard as a synonym of *C. grandiflora*. The great difference is that, in all the specimens referred to, the root-leaves are finely divided, and all the stem-leaves more or less so, and in many cases numerously parted. In Wright's Texas specimens, the root-leaves are as finely divided

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INTENTIONAL SECOND EXPOSURE
TEXT CUT OFF

as parsley leaves. In our plant, the root leaves are lanceolate and entire. The stem-leaves are mostly so,—only in a few rare instances are they three-parted. The mere division of the leaves, alone, would not be regarded as a sufficient distinguishing character to mark a species, this character being variable in many plants; but taken into consideration with many others which go under the general term of "general appearance," the character is worth a great deal. Our plant grows from four to five feet high, which is much taller than any of the forms recorded seem to have reached.

In connection with this question of doubt, as to the proper identification of this plant, the student in botanical bibliography will be interested in noting that the plant was never fully described by any botanist, originally. In Gray's "Synoptical Flora," above cited, Nuttall is quoted as the author of the species. But in the seventh volume of the Transactions of the American Philosophical Society, Nuttall, while describing the plants found in his journey to Arkansas merely records the name, and says "sent by that name to Mr. Barclay, from the plains of the Arkansas," the only attempt at description being "leaves pseudo-pinnate." This specimen, preserved in the Herbarium of the Academy, accords with Hooker's figure of *Coreopsis longipes*; but not with our, nor with Dr. Gray's description.

Of Barclay, whose name is connected with this plant, little more is known than of the early history of the plant itself. Nuttall's account indicates that the specimen given him was raised in a garden in Philadelphia,—and that he was sometime a resident in Philadelphia is confirmed by a book, in the possession of the author, "presented by Robert Barclay," and evidently written in Philadelphia. But this is all that seems to be known. One account of him says he "collected in Sitka," and nothing more. In a history of American Botany, given in the 14th volume of the "American Naturalist," it is stated that Barclay was Botanist to the expedition of the "Sulphur," under Captain Belcher, and that the Ship's surgeon, Hinds, was his assistant, that he was in the service of Kew Gardens, and made the exploration of the Pacific Coast, in 1838, visiting Prince William Sound, Port Mulgrave, Sitka, Nutka Sound, San Francisco, the Sacramento River, and Monterey,—but the Botany of the voyage of the "Sulphur," is wholly by Hinds,—Barclay's name not appearing even in the introduction. Lindley, while figuring and describing *Maurandia Barclayana*, from Mexico, describes it as from the superb collection of Robert Barclay.

Singularly enough, our own collectors, who report local collections, do not seem to have noted this plant to any great extent. Among the author's, notes, the only reference is to a statement by Mr. Broadhead, in the third volume of the "Botanical Gazette," that it has not progressed far northwardly in Missouri, being found only in Bates and Vernon Counties. The specimens in collections are chiefly from Texas and Arkansas. Dr. Gray gives its range as "Georgia to Southern Missouri, and Texas." DeCandolle observes that its locality was unknown, though it was sent from New York to England. The form *longipes*, of Hooker, was grown from Texan seed sent by Drummond.

The great home of the genus *Coreopsis* is in the Southwest, Texas and Arkansas furnishing a goodly portion, though many species are scattered through the Sea Board states of the Union, south of the Potomac. Few good species are found north of this line. A number of Texan species are well-known ornaments of our gardens, many of them having a tendency to have the lower portion of the ray florets of a deep brown. There are also a few Mexican species under cultivation, though these have mostly been removed to another genus, *Cosmos*. A few are found as far south as Peru, and one or two are natives of the Sandwich Islands. A remarkable feature in the geographical distribution of the species of this genus is the appearance of large numbers in many parts of Africa.

The species here figured indicates its tropical affinities by an indifference to heat and drought. It is one of the best of garden flowers on this account, and is in bloom from mid-summer till late in the autumn, and is therefore popular with florists, especially as it affords good material for use in cut-flower work. With florists they are known as Texas daisies.

EXPLANATION OF THE PLATE.—1. Section of a lower portion of the stem. 2. Section midway of the main stem. 3. Section of the upper or flowering portion. 4. Magnified floret, with chaffy scale, rising from the base. 5. Longitudinal section of the receptacle.

WILD FLOWERS AND NATURE.

THE HEMLOCK TREE.

O hemlock tree! O hemlock tree!
How faithful are thy branches!
Green not alone in summer time,
But in the winters' frost and rime!
O hemlock tree! O hemlock tree!
How faithful are thy branches.

—LONGFELLOW.

THE NEST OF THE CHIMNEY SWALLOW.—MEEHANS' MONTHLY is unquestionably right in asserting that the glue which lines the nest of the chimney swift is of vegetable origin.

One who will observe the bird, and who will examine a nest, will discover that the gum of the cherry and of the peach tree, is the material which form the bulk of the structure.

The mad impatience of many of our early naturalists to rush into print to gain the priority, without waiting for confirmation of theories, has caused a confusion in the sciences, from which we have not yet emerged.

It is a remarkable fact, that a Professor of the University of Pennsylvania, writing in 1779, is responsible for the following: "In regard to the swallows, I shall say but little at present. I have at this time, in the press, a memoir on the migration and torpidity of these birds. I am confident that I shall be able to convince every candid philosopher, that great numbers of swallows, of different species, do occasionally pass into a state of torpidity, more or less profound." * * * "Very extensive inquiries have convinced me that the instances of torpid swallows are much more frequent than I formerly supposed they were; and that there are two species of the genus *Hirundo*, which are peculiarly disposed to pass the brumal season in the cavities of rocks, in the hollows of trees and in other similar situations, where they have often been found in a soporose state. These species are the *Hirundo Riparia*, or sand swallow, and the *H. Pelasgia*, which we call the chimney swallow. There is no fact in Ornithology better established than the fact of the occasional torpidity of these two species of *Hirundo*."

In Prof. Barton's own day, the absurdity of these "facts" were pointed out by both William Bartram and Alexander Wilson.

We should not be too severe upon Audubon for the fish story. Rafinesque was very eccentric and certainly was never understood or appreciated by his contemporaries. Even good old Dr. Darlington condemns him for his mania for new names and new forms, and deplores the confusion for which he was instrumental in introducing into many departments of the natural sciences.

EDWIN C. JELLETT.

Philadelphia.

USES OF SPINES TO PLANTS.—Much speculation is indulged in as to the uses of spines and prickles to plants. Some assert they are given to plants for protection—others that they are given to aid in climbing—and still others have made various suggestions. That they do sometimes protect, aid and assist, is true—just as in the hands of a virago, a broomstick is a formidable weapon of defense. Bnt it can by no means be asserted that any such special offices have been assigned them.

The thorniest and most prickly plants are more abundant on deserts were animal enemies of plants are comparatively scarce, than on plants growing in localities where such protection would be better in order. It is, however, certain that much may be said on both sides of this interesting question.

OUR NATIVE AZALEAS.—The hardy azaleas of our gardens are improvements on the Azalea Pontica of the Old World. On the conductors' table is a box of flowers of the common native of Southern mountains which are about as varied in color as the improved foreign species present,—while they are larger, and in every way more beautiful. It is not generally known, that this species, *Azalea calendulacea* is so variable naturally. We are indebted to Miss Rutledge, of Flat Rock, North Carolina, for this very enjoyable treat.

ABNORMAL GROWTH IN INDIAN CORN.—The abnormal corn plant described and figured in the July number of the MONTHLY, seems to me to be a case of "reversion" and not of progressive development.

Mrs. Kellerman, in an article on "The Primitive Corn" in the March number, says: "I would say that the Primitive Indian Corn was a grass-like plant (a grass in reality) *with a branch springing from the several nodes or joints*. Each branch was crowned with both staminate and pistillate organs. * * * Natural selection lifted the staminate flowers to the tassel of the main stalk and left the pistillate below on the side branches. *These branches became shortened, and form the shank or footstalk of our present ear.*"

This, I think, clearly explains the "freak" if we regard it as an instance of atavism.

FRANK N. TILLINGHAST.

Greenport, N. Y.

PLATANUS OCCIDENTALIS.—In the February and April issues of the Monthly for 1893, as to large Plane trees, we are led to believe that in the Mississippi and Ohio valleys have been found the largest specimens; notably in south eastern Missouri, southern Indiana and Illinois and in Kentucky. Fine specimens have been reported from western New York. The Plane is found along many of the Texas creeks and rivers east of the Pecos. West of that stream it is seen in a few localities along the Rio Grande. I have not seen Plane trees of any remarkable size in Texas; the largest between four and five feet in thickness of trunk.

It may be that the species (*P. occidentalis*) in the Southern states is represented by trees shorter lived than those farther North. The leaves seem to be smaller. They also show perhaps a greater diversity than the Northern forms. I send two deviations from the type. The three pointed leaf is from a tree near Houston. The leaf with dentate margin is from the north border of Llano County.

The Plane has long been cultivated in portions of the East, West and South as a shade and lawn tree, but it does not seem to be as popular as in former years.

(1) In New York several years ago, it was much esteemed as a shade tree. I do not know that it has been grown or succeeded well in California. The two native species of California and Arizona (*P. racemosa* and *P. Wrightii*) do not seem to have been cultivated to any great extent. The same may be said of the two or three Mexican species that do not range north into the United States. The Oriental Plane has been introduced into the United States and cultivated with success. I believe it is regarded as a more vigorous tree than its Occidental relative. Both species have been cultivated in Europe in different portions. Perhaps the American species is less popular than its Oriental kin. Though it has been of little value in the arts, the American Plane has (2) of late come into demand for the inside finishing of houses. Doubtless the old world species is fully as well adapted for the purpose.

Reports have been sent forth that some of the Plane trees cultivated in Europe are suffering from a peculiar disease; the tips of the branches attacked by a fungus similar to that which injured so many of the trees in America about forty years ago; when thousands of trees died and many others were injured. I think it has been stated that before it was afflicted by the disease, the American Plane was a more vigorous tree than it has been in the past thirty or thirty-five years.

A writer has noted in the *Gardeners' Chronicle* that the stellate hairs of some of the Planes cause irritation to the mucous (3) membranes of the throat and nose; a fact known to Galen, Dioscorides and Plato. An article in the Bulletin of the Torrey Club, "On the casting off of the tips of branches of certain trees," as to a habit common to many species, (4) mentions *P. occidentalis* as a striking example. All facts relating to our forest trees are interesting. We can be convinced that many facts in reference to the Plane trees can be collected.

The Genus Platanus is of special interest on account of the late published records (5) as to the fossil species. Much knowledge has been gained of late years on the palæontological history of the genus. Several (6) new species have been named.

As to the common names, Plane tree, Buttonwood, Sycamore, the most appropriate may perhaps be the Plane. In Europe they speak of the Oriental or Eastern Plane, and our species as the American or Western Plane.

Works consulted, referred to by numbers in parenthesis:

1. Bulletin, Torrey Bot. Club, Oct.'80 pg. 108.
2. Garden and Forest, No. 262, pg. 108.
3. Gard. Chron., Vol. 3, pg. 370.
4. Bulletin, T. B. C., Apr. '93, pg. 163.
5. Proc. U. S. Nat. Mus. Vol. 11, '88 (L. F. Ward.) Bot. Jahrbuch, Vol. 11, pgs. 412 and 458, (*Abstammung der Platanen* by Johann Janko.)
6. Bulletin T. B. C., March '93, Platanus Newberyana, pg. 94, Platanus Aquehongensis, pg. 135.

PLATANUS OCCIDENTALIS, FROM TEXAS.

A catalogue of large trees in Missouri I think was prepared about 20 years ago by Prof. Swallow of the State College, Columbia, Mo. I have not the entire pamphlet.

G. C. NEALLEY.

San Diego, Texas.

We have had engravings made of the leaves sent by our correspondent. The point made that vital power has much to with the longevity and characteristic forms of plants is justified by the observations of others,—and the unsuitability of the Northern Plane to the Texan climate has undoubtedly to do with the shorter life and vagaries of form.

The late Dr. Engelmann was a close observer of plant life. In a letter to the writer many years ago, he expressed the opinion that the ribs and veins of leaves were in a certain sense "after thoughts." Growth first appears in the form of cells. In time these cells need some strengthening frame, and then the ribs and veins follow for that purpose. They need protection from without, and then they turn themselves into bark layers and so on through the whole chapter. The various degrees of energy decide the nature of these changes. The degree of energy decides the special form. In other words the degree of energy decides the species.

In the illustrations we see that the trilobed leaf has the weakest petiole. A lessened vital energy originates the form.

The disease of the Eastern Plane referred to has appeared on trees growing in America this season.

EFFECTS OF SCALE ON BRANCHES OF TREES.—It is not usual for scale insects to so injure the cells engaged in the work of forming a new layer of wood to so thoroughly destroy them that the outer layer of cells has to grow over laterally, just as they have to do when the bark is wounded externally. Some Azalea branches were pitted in this way. Prof. L. O. Howard, the United States Entomologist, has this interesting note regarding them:—

"The phenomenon which you mention, viz., the development of cells laterally, so as to produce elevation about the barklouse, is a not uncommon result of the work of certain forms of Coccidæ, although it is not produced by our commonest species of the northeast. The particular insect on this branch is a species of *Prosopophora*, and this, sunken-in appearance, is to a certain extent characteristic of most of the insects of this genus. We have a species on the cottonwood from the southwest which does this work, occurring on the younger twigs, and I have seen similar results follow the work of one or two species in the greenhouses of the Department of Agriculture. It is very noticeable in the work of *Rhizococcus quercus*,—a beautiful species which occurs upon the oak in three or four localities in this country, to which points it has been introduced direct from Europe."

SPRING FLOWERS IN THE FALL.—Mr. E. Newlin Williams, a Pennsylvania correspondent, writes:—"Exploring the north slope of one of our Bucks County hills, on the dark afternoon of November 10, 1894, I come upon some blossoms of Azalea (*Rhododendron nudiflorum*), the stamens protruding with as graceful a curve as any could in May, but the pale pink corolla lobes much reduced by continued days of cold and cloudiness. In spite of this I noticed a faint sweet perfume; there were no leaves, the tender green of the blossom-time foliage being held in reserve for a season of more certain sunshine.

It was as much of a surprise as a flurry of snow in June, to come upon these belated flowers, in the unfit environment of November browns, tipping the bare forking branches of the low shrub with spring-like signs of life."

It is a general impression that when spring-flowering plants blossom in the fall, it is because they have become absent minded,—imagining spring had come, when there had been but a few fine days. This may be the case with dandelions, and other stupid things; but the higher organized plants know better, and under ordinary circumstances remain dormant till springtime really comes. In these cases, and the flowering in November of the Wood Honeysuckle is probably one, the early loss of leaves brings on the flowering. If in summer, a fire went through the wood, the leaves were eaten by caterpillars, or if destroyed by fungus or any other cause, the flowerbuds intended for spring, will open in the autumn. A very common illustration is afforded by pear trees affected by leaf-blight. The leaves fall long before their natural time,—and the second growth, with the consequent flowering, is an effort to do over again, work already done imperfectly.

THE VENUS FLY-TRAP.—This remarkable plant, the *Dionæa muscipula* of botanists, is only known to exist in one locality in the whole world, namely, Wilmington, N. C. As it is one of the most remarkable plants in the vegetable kingdom, and very much sought after by the curious, it has been feared that the plant might be eradicated. Dr. MacFarlane, of the University of Pennsylvania, states, however, that in a recent visit to Wilmington, he found it in such immense quantities, that there is little danger of its extermination. Acres of ground, he says, can be crossed where the plant is so abundant as to make the whole area like a lawn. He took up a tuft thirteen inches by nineteen, in order to bring home, and found it to contain thirty-one plants.

A REMARKABLE MONSTROUS CACTUS.—Mr. A. L. Siler, of Ranch, Utah, and in whose honor *Echinocactus Sileri* was named, sends the following note regarding a remarkable monstrous form of it:

"In all my wanderings around in the mountains of Utah, for the last forty-six years, I have found many curious things, but of them all, an *Echinocactus Sileri*, that I found last year, beats them all. It is in the form of a large Snake. It is folded over and under in such a way that it is not possible to tell anything about the exact length of it, but I judge that it is 5 or 6 feet long. It is covered with short very stiff white spines. I enclose a cluster."

GENERAL GARDENING.

A COUNTRY ORCHARD.

"A little past the village
The inn stood, low and white;
Green shady trees behind it,
And an orchard on the right,
Where over the green paling
The red-cheeked apples hung,
As if to watch how wearily
The sign-board creaked and swung.

"The heavy-laden branches
Over the road hung low,
Reflected fruit or blossom
From the wayside well below,
Where children, drawing water,
Looked up and paused to see
Amid the apple-branches,
A purple Judas-tree."

—ADELAIDE PROCTOR.

ROOTING INDIA-RUBBER PLANTS.—How to root India-Rubber plants, *Ficus elastica*, is a question often asked by amateurs. During a recent visit to "Silver Spring," the residence of John Pettit Esq., of South Orange, N. J., the gardener, Mr. M. Doyle, showed me a nice lot of young plants which he rooted in the following manner: He simply cut some tops of old plants, about 8 inches long, and potted them into 4-inch pots filled with sphagnum moss alone, rammed down firmly; placed them in a shady place in among palms, and kept the moss wet. That they were a success, I can vouch for. Small specimens of this plant are very useful for decoration, standing the atmosphere of the dwelling-house well.

WM. FITZWILLIAM.

Orange, N. J.

PRUNING HEDGES.—In a recent number of MEEHANS' MONTHLY I notice an article on pruning hedges. The Long Island correspondent will do well to follow the advice given in the August number, and not cut down until two years after planting. The roots will be in good working order by that time. And when cut back the plants will break away much stronger. We had a hedge of Japan Privet about twelve feet high being spoiled by a picket fence, which was taken away, the hedge cut down to within eighteen inches of the ground, and to-day is a fine hedge. Pruning is done here after the wood becomes hard, say in August, then again in the fall after the hedge is done growing. This is the general rule for established hedges. Hedges intended to be cut away back should be done in the spring. I herewith send you a cut of a California privet hedge that I planted six years ago and serves as a fence around my cottage, see page 211. While pruning three seasons ago at this time, the idea struck me to try something of this kind. To make arches, a flat top hedge is best. When pruning I measured four feet, cut out the space and left enough of wood to form the arches, draw the heads together, and tie in the centre with string. The two gateways are arched in the same and look very pretty. If you think this picture and few remarks worthy of publication, you are welcome.

CHARLES MITCHELL.

Mamaroneck, N. Y.

THE ROBINIA HISPIDA.—This species of the locust tree family is one of the most beautiful of all, though not a tree, but simply a strong-growing shrub. In many cases, it forms only a low bush; but the long clusters of rose-colored flowers are delightful. Unfortunately, it is very much a favorite with the Locust Borer, and whenever that insect prevails, the plants soon go out of cultivation. This, no doubt, is the great enemy of all forms of *Robinia* or Locust. The Clammy Locust, *Robinia viscosa*, is a remarkably pretty tree when healthy. The flowers are the same shape and form as the common locust,—perhaps larger and richer, if there is any difference, and the tree much more regular and in every way beautiful; but it is more popular with the Locust Borer than the well known Yellow Locust, which is *Robinia pseud-acacia*. In those parts of our country where the Locust Tree Borer has not yet made for itself a home, there are a few more deservedly popular plants for ornamental gardening than the different forms of these locusts.

THE SCOTCH PINE.—Almost all nurserymen tell, as the result of their business experience, that there are waves of fashion in regard to varieties to plant, just as there are waves of fashion in everything else, and for which no accountable reason can be given. This is especially true of the demand for certain kinds of trees. It is not so many years ago, that one of the articles most frequently called for among evergreens, was the Scotch Pine; but during the last ten or twelve years, the Scotch Pine has scarcely been asked for. It is rather to be regretted, as in many respects, it is unique among the coniferous family. Pines, generally have a somewhat formal habit of growth. They make one straight leader, while the side branches are comparatively weak, and every course of branches is a repetition, in character, of the course produced the year before; but the Scotch Pine has a regular habit. Some of the side branches will, in time, become nearly as large as the leader; and indeed, after a certain number of years, no leader, that could be properly so-called, exists. The Scotch Pine has also the same character among evergreens as the oak has among the deciduous trees, which it is well known will often produce side branches so large as almost to compete with the trunk in magnitude. In addition to this regular character in the Scotch Pine, is the glaucous color of the foliage, by which it can be distinguished at long distances. Again, few have the bark of such a very strong tint of reddish brown. When in a strong clay soil, that is not too wet, it will produce grand specimens of beauty; but when in light gravelly soils, it is very apt to get thin in foliage, and not at all a respectable looking tree. When gardening becomes the art it is destined to become, and those who pursue it are familiar with the best soil suited to each kind of tree, and of proper situations that each kind prefers, the Scotch Pine will be far more popular than it is to-day.

WISTARIAS.—It is remarkable that, while so many plants have a tendency to vary, the Chinese Wistaria is one of the few which seem to resist the tendency to variation. Even the Chinese, with all their boasted skill in floriculture, have been unable to make many varieties from them. The ordinary blue wistaria of our gardens is, however, an improvement; but the flowers of the wild, Chinese form, in its native condition, are of a very light, pinkish tint, and the blue one in general cultivation, the one originally imported from China, is simply a garden variety of the wild form. When seeds of these blue or purple wistarias are sown, the progeny will be lighter in their flowers than the original. The only variations known, besides this regular blue or purple form, is a pure white one, and another with very long racemes called the *multijuga*. The term "*multijuga*" simply means the having of a very great number of pairs of leaflets over the ordinary form; but the same law which increases the number of leaflets also increases the number of flowers on a raceme. There is an American species of wistaria, known as *Wistaria frutescens*, with much shorter and wider clusters of flowers, and of a very pale, lilac color,—and besides this there is another known as *Wistaria magnifica*. This was introduced over a quarter of a century ago as a hybrid between the American and the Chinese, but after all it may be only a "sport," as horticulturists, say,—that is, a natural departure, independent of hybridization. Still, it is in many respects intermediate in character between the American and the Chinese species. There is a vast difference in the seed vessels of these two,—that of the *magnifica* is precisely that of the American species. It is believed that if it was the product of hybridization there would be some difference in the fruit.

POINSETTIA PULCHERRIMA.—This is known as the Christmas Flower, on account of the large scarlet bracts being in their best condition about the Christmas season. At one time it was very popular with florists. The flowers were cut and the bracts fastened to stems. In these days, nothing which requires stemming is popular with florists. It will, however, be long cultivated in green-houses where brilliant bloom in winter is desirable. It is a native of Mexico, and therefore not hardy in the greater portions of the United States; though in the extreme of Florida, where there is no frost, and in the lower portions of California, similarly favored, they will grow to small trees in size, and are striking features in the ornamental gardening of those sections.

THE BEST SEASON FOR TREE PLANTING.—It does seem as if the question as to the best season for planting will never be settled, and it never can be settled by any general rule. What may be good for one location would be bad for another, although but a few miles apart. In this part of the world, Eastern Pennsylvania, admirable success is always secured by planting as early in the fall as possible after rains have softened the soil sufficiently to enable the ground to be dug into. A correspondent from Boston tells us that he always has complete success by planting in August, and he plants very extensively too. One would suppose that where the winters were very severe, and cold winds strong, the transplanted stock would dry out in the winter time. If this is the case, planting should be deferred until spring,—but even then there is this difficulty that the hot summer weather will follow so soon after planting that trees suffer from dying out in the same way. There can be no general rule. Every one with a little experience should endeavor to find out the successful practice of his neighbor as well as to experiment a little for himself.

PLATANUS OCCIDENTALIS, FROM TEXAS--A VARIATION --SEE PAGE 204.

THE RAMASES ROSE.—The beautiful introduction, *Rosa rugosa*, is now getting most generally known under the Chinese name of the Ramases Rose. It is certainly one of the most valuable introductions to ornamental shrubs that have been introduced for many years. It has not only large, sweet, pink flowers, which are beautiful and somewhat continuous just before mid-summer; but the large red fruit, later in the season, renders the plant particularly attractive at several periods of the year. Many attempts have been made to cross the flowers with other varieties or species of rose, but for some reason or other, the seedlings resist the influence of pollen, and though experiments are ever so carefully made, very few real crosses occur. One of these, however, is a decidedly good thing. It is in cultivation under the name of Madame Georges Bruant. This is said to have had the well-known rose, Sombreuil, for its parent. The flowers are not only large, but are produced in heavy clusters, and are continuous through the whole season. Another more recent success has recently been brought to attention by a German work on roses,—the *Rosenzeitung*. The variety is named Souvenir de Christophe Cochet. The flower is peach color, semi-double, and, when fully expanded, is six inches across. In its younger condition, the flower is cup-shaped, and fully equal in character to many of our common hybrid perpetual roses. We do not know whether it has been introduced into America or not, but it will certainly take its place with the other good varieties referred to.

HARDY RHODODENDRONS. — Many persons know that some varieties of the garden rhododendron are hardy, while a number of them are killed by comparatively mild weather; but there are few who understand the reason for this. The rhododendron of North Carolina, known botanically as *Rhododendron Catawbiense*, is perfectly hardy under all conditions; but the rhododendron of the Old World, botanically, *Rhododendron Ponticum*, will not stand the rigors of our winters, as a general thing. What are known as garden rhododendrons, are hybrids between these two species; but hybrid species vary in their characteristics. Some take more after the character of one; while others take more after that of the other. This is the reason why some are tender like the Pontic parent, and others are hardy like their American progenitor. In selecting hardy rhododendrons, therefore, from the seed bed, those are chosen which have the foliage more like the American species. These leaves are oval and blunt-pointed, while the Pontic, or tender rhododendron, has lance-shaped, sharp-pointed leaves. In regard to the named varieties, the same rules apply in selection. It must be remembered, however, that something of the hardiness depends on the situation. The sun in winter is a great enemy, and a plant of rhododendron is as much likely to suffer from being sheltered from the wind, if exposed to full sunlight when frozen, as it is from strong wintry blasts. The rhododendron is very fond of the shade of overhanging trees, provided the ground is comparatively moist, as the little hair-like fibers love to be near the surface of the earth under these conditions. In their wild locations, they are frequently found on rocky crags where moisture is continually dripping down, although there may be scarcely any earth to nourish or sustain them. If, therefore, a spot is selected under the shade of trees, care must be taken to see that the location is not one that will dry readily in the summer time. The same remarks apply to the kalmia, which is often known as the Wood Laurel, while the common name given to the rhododendron, is Mountain Laurel.

THE SWEET BRIER.—Among the many old-fashioned flowers which have retained the love of the people, few are better known than the Sweet Brier. In addition to the delightful odor which the rosy flowers disperse, the leaves are covered with a glandular exudation, which gives it a pleasant fragrance at all seasons, whether the rose bush is in bloom or not. Besides this, it is somewhat of a rambler, and will take the place of the climbing rose. An additional merit is that it is perfectly hardy in our climate, when not planted in the full sun, for it does not like the American summer heats. In the fall of the year, and until early winter has passed, the scarlet fruit, —or as they are popularly called, the "hips" of the rose, are attractive, so that in one respect or another, a Sweet Brier Rose will give pleasure all the year round.

TRIMMING HEDGES.—A nicely trimmed hedge is an ornament every owner of a garden is proud of, and there are many different styles of pruning. One of the prettiest is exemplified on the grounds of Mrs. Morrell at Mamaroneck, N. J., which forms a dividing line between the gardener's house, and other portions of the grounds. The gardener, Mr. Charles Mitchell, is one of those good men who do honor to the profession.

THE VERBENA. — There are changes of fashion in flowers as well as changes of fashion in dress and other things, and in nothing, perhaps, is this more exemplified than in the cultivation of the verbena. Less than a quarter of a century ago, no garden was regarded complete without some verbenas, and the main stock of many florist's greenhouses consisted of verbena plants. They were among the cheapest and most valuable of floral decorations, selling at from $4.00 to $6.00 a hundred, and there were few people who did not invest $3.00 or $4.00 annually in verbenas for the decoration of their flower borders; but now it is extremely rare to see a verbena in any garden. Fashion has taken to other things. Possibly the fungus disease, known as the rust, has something to do with this disappearance as well as the vagaries of fashion. Many kinds of plants suffer from the same disease which does so much injury to the verbena; but few of them suffer to the great extent which the verbena did. At one time, long lists of varieties were published, each with a distinguished name,—even Thomas Meehan being so honored; but since the incoming of this disease, no attempt is made to keep the varieties distinct and under separate names in florists' catalogues. Those who would have them, depend on raising them from seed, which is readily obtained in the seed stores. The disease does not fasten itself, to any great extent, on seedlings during the first year of their existence, so that the seedling verbena is liable to be comparatively healthy. There are large numbers of species of verbena known to botanists; but the ones from which the modern garden varieties were improved, were the *Verbena melindris* and *Verbena Tweediana*. These were first introduced by a well known florist of Philadelphia, Robert Buist, who received them from a Mr. Tweedie, who found them wild near Buenos Ayres.

RESIDENCE OF CHARLES MITCHELL.—SEE PAGE 207.
(Gardener to Mrs. Morrell, Mamaroneck, N. Y.)

THE TREE WISTARIA.—Both the wistaria and trumpet vine make pretty objects when trained to a stake or pole four or five feet or more in height, and the head then cut off, so as to leave the branches hanging like a weeping tree. Unfortunately they must be continually kept staked, otherwise they sag over when the heads become heavy, as they invariably lean with age. If, therefore, it is desired to keep them for any length of time in an upright position, an iron stake is better than a wooden one; but this must have a branching base, in order to help maintain its erect position, as otherwise the iron, by its weight, would topple over as easily as the tree would without it.

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INTENTIONAL SECOND EXPOSURE

PRUNING TREES.—Mr. John H. Fulmer, of Richmond Centre, Pa., has trees from six to eight inches in diameter that have never been pruned, he says, and would like to cut back the limbs to within two or three feet of the trunk of the tree. He would like to know when is the best time to do this. Again, we have a question which it is impossible to answer with any satisfaction. The inquirer supposes that it is necessary that all trees should be trimmed in their early stages, but this cannot be conceded. No pruning is ever necessary unless with a desire to accomplish certain objects. That object must be defined before anyone can decide whether the tree is to be pruned at all or not. One might judge from this inquiry that the desire is to keep the tree very bushy near the trunk, so that the branches should never extend very far away; but pruning in the winter or autumn will not accomplish this. Branches would only push all the stronger when the springtime came. What is known among florists as the pinching-back method is the proper one to pursue in order to keep trees close and dense,—that is to say, the strong and vigorous shoots are pinched out when they begin to grow. There is no other way by which a tree, which usually is spreading and lofty, can be kept within reasonable bounds.

TRANSPLANTING LARGE TREES.—Part the first of volume 19 of the "Journal of the Royal Horticulture Society of England," which has recently appeared, has a lengthy and elaborate article on the transplanting of large trees. The method employed is extremely costly and is in striking contrast with the simplicity with which the art is practiced in America. It is found, in this part of the world, that a large tree can be removed just as successfully as a small one, providing the same care is exercised to get all the roots in the large tree, as we would do in the case of the small one. No intelligent planter now cares more about the removal of a large ball of earth with a big tree than a little one. The only care required in a comparatively small tree is to get all the roots possible, and this is all the care required for a larger one. The digging has to start a little farther from the trunk in the large trees, and that is all the difference. In a small tree digging may start at two feet from the trunk,—in a larger one three feet; and four and five feet, according as the tree increases in size; and the next care is in seeing that the earth is properly packed in about the roots when it is transplanted, and not merely packed in, but pressed in and hammered in as tightly as possible. The writer has known trees between two and three feet in circumference and twenty-five feet in height to be moved several miles and re-planted all within a cost of twenty dollars; and the trees would subsequently thrive just as well as small saplings would do.

AUCUBA JAPONICA.—Although most plants from Japan thrive well in America, the broad-leaved evergreens from that country seem to hesitate about accommodating themselves to our conditions; but if they are planted where the very keen winter winds will not worry them, or where the warm winter suns will not shine on them, they do fairly well. Wherever anyone can without much difficulty get these conditions, it is well worth while to plant them. Among the prettiest of these Japanese plants is the *Aucuba Japonica*. These have shining leaves as large as one's hand. There are varieties in cultivation, some of them with golden spotted leaves, and on account of the oddity are in some demand; but the rich, bright green of the original species is beauty enough for the average lover of handsome plants. The flowers are of different sexes on different plants. Where the two can be grown in proximity, one form has an abundance of red, holly-like berries, and adds an additional attraction to the bright green of the foliage.

THE TROUBLES OF GARDENERS.—In every part of the world there are peculiar troubles which annoy the gardener, although varying in character in almost every place. Those who garden in the West Indies write to their papers as how to destroy pink and blue crabs. They complain terribly of their depredation. We should want something else than crabs to worry us in our American gardens,—although a sort of crawfish is somewhat troublesome in New Orleans.

THE CRESTED DOGS-TAIL GRASS.—Mr. Ellis B. Noyes, writes that it is in a measure naturalized near Portsmouth, Va.

THE CENTURY PLANT.—Some surprise is expressed, occasionally, that the Century Plant should die after blooming; but really, all plants of this character die after flowering, Herbaceous plants all die,—strawberry plants die after flowering,—and so do bulbous plants. The flowering portion dies away, and off-sets or suckers continue the plant. Even the pineapple has to go through the same process. It is the suckers, and not the old plants, which keep up the race.

THE DUTCHMAN'S PIPE.—Most garden lovers know the Dutchman's Pipe, or, as those who like more elegant expressions say, "pipe vine." The plant is, botanically, *Aristolochia sipho*, The flowers are shaped like some fashionable, German tobacco pipe. When inverted, however, it has some resemblance to a bird. There are a large number of species of *Aristolochia* in South America, all of them having this same bird-like appearance. One of these is known as *Aristolochia gigas*. The end of the flower, or, to carry along the figurative style, the "pipe bowl" portion, spreads out, and presents an appearance like the back of a water bird,—the other portion will then give the curved neck and the head of the bird. On account of this resemblance, it is going through the country under the name of the "goose flower." It certainly has some resemblance to a goose.

THE JAPAN HONEYSUCKLE.—There are two varieties of the *Lonicera Japonica* in cultivation. One, known as Hall's Japan, which has a somewhat downy character; and the other known as the Evergreen Japan, the leaves of which are more shining, and which has a greater tendency to trail on the ground, although both climb equally well when they have a good opportunity; but they are admirably adapted to many kinds of garden work, for which few plants will do as well. They will climb over dry banks where little else will grow, clothing them with vegetation, and will thrive well under the shaded trees where grass will not grow. They are also admirable arbor plants, and are frequently used for covering stumps and rocks. The flowers are delightfully fragrant, and, when the plants are mature, they are ornamented with shining black berries in the autumn. Although one is distinctively called the evergreen form, they are both very tenacious of their foliage, and seldom lose it in winter, unless the winters are severe, and then only towards spring. The evergreen form was at one time thought to be a different species from *Lonicera Japonica*, and is often listed in the catalogues as *Lonicera brachypoda*. Another variety is known in gardens as the Chinese Honeysuckle, and has been thought to be a species, and named by botanists, *Lonicera flexuosa*. The flowers of these are pinkish, and the young twigs have a reddish tint, but it never shows the same disposition to run on the ground and form a matted mass of foliage as the other two varieties do. Without these three forms of Japan honeysuckle, we should miss a great deal of pleasure in gardening.

NEW OR RARE PLANTS.

A WILD BEAN.—Many pretty plants get scattered over the world through the agency of the agriculturist. A correspondent from Moscow, Vt., sends a specimen for a name, which proves to be the wild bean of New Jersey, *Phaseolus diversiloba*. It came up among some sweet potatoes, obtained from a Boston seed-store. It is a very pretty plant, but there is scarcely any danger of it becoming a troublesome weed. A plate of it has already appeared in the "Flowers and Ferns of the United States."

THE WHITE BERRIED ELDER TREE.—Mr. Warren P. Adams, of Abington, Pa., sends samples of a very pretty sport of the common wild elderberry bush, the berries being colorless instead of black. Such a sport is to be expected, for nearly everything which has fruit normally of a dark color will occasionally produce albinos. It is a very interesting variety and deserves cultivation.

THE CANARY BROOM.—Some forty years ago, the writer of this paragraph found a plant of the Canary Broom, *Cytisus racemosus*, in Wm. Bartram's old conservatory, in the famous Bartram Garden, from which he was permitted to take a few cuttings. The demand for the plants was comparatively slow; but all of a sudden it became extremely popular as a plant

for winter blooming. To-day it is one of the most frequently seen of winter blooming plants everywhere; and many hundreds of them are sold in Philadelphia during the winter season.

STOKESIA CYANEA.—Though *Stokesia cyanea* is found here and there through Georgia and South Carolina, it is nowhere abundant and is indeed rarely seen except as a cultivated plant in gardens. It has impressed itself on the gar-

STOKESIA CYANEA.
(Flowers blue; reduced three-fourths.)

den lover more than ever this year by its drought-resisting powers. The deep blue flowers are as large as the China aster, and the plant grows to about the same height. It is one of the most desirable herbaceous plants.

ABUTILONS.—Referring to a recent note on the improvement of Abutilons, Mrs. Theodosia Shepherd, of Ventura, California, says:

Regarding Abutilons, I have wondered why florists did not use them more for cut flowers, for they keep well, are beautiful in color and shape and they bloom most profusely in the winter when other flowers are scarce.

An artist from Boston, who visited my garden last spring when the Abutilons were adorned with their thousands of swinging bells, was perfectly enraptured with them, and longed to picture them on canvas.

People, generally, have little idea of their beauty and are surprised on learning that there are so many varieties,—that they are so showy and are so charming for cut flowers.

It is a great pleasure to note the graceful and dainty shapes and the beautiful colors of the new Abutilons. Some are like little parachutes, others with large crinkled blossoms, a few with long slender flowers, shining like satin, and hanging in profusion from the spreading branches, a perfect shower of bright scarlet; the colors are innumerable, various shades of salmon and yellow, pink and rose, pure white, resembling dainty Hare-bells and deep rich shades red and wine color, a bewildering collection of beauty when gathered together for decoration.

For corsage wear, the varieties with long wiry stems are preferable; of the smaller flowered varieties, it requires ten to twenty blossoms, of the larger flowers less. As these flowers are bells there should be no foliage used to interfere with their graceful droop; the green calyx of each one makes sufficient contrast in the color. If desired, a spray of maiden-hair fern or asparagus for a back-ground adds to the effect.

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Abutilons grow very readily from seed, and should be most interesting to amateurs. They frequently bloom when they are but ten inches high, and as they are perpetual bloomers, it seems strange that they are not more in demand. The delight of growing things from seed and watching for the coming of new flowers, is a pleasure much greater than growing plants from cuttings when one knowns exactly what to expect when they blossom. Each seed holds a secret and one waits with deep interest for the revelation that is unfolded day by day.

COTTON GRASS.—A correspondent sends for a name a specimen of a grass found at Columbus, Pa., and which is believed to be rare. It is, however, rather common. It is *Eriophorum* or Cotton grass; and it is rather surprising among such a vast variety of grasses cultivated by the lover of these curious forms, that our native Cotton grasses are not seen among them. The heads are like small balls of silky cotton.

FRUITS AND VEGETABLES.

THE SPINELESS GOOSEBERRY.—The spineless gooseberry now being introduced by Mr. Joosten, of New York, promises to be the parent of a very interesting race which will be welcomed by fruit growers. The prickly spine of the gooseberry is always considered a misfortune by those who love to grow the fruit for its own sake. According to foreign serials, the present spineless gooseberry is the result of an effort made by Mr. Edward Lefórt, a French cultivator,—who raised a plant having no spines. A mere chance seedling was found by Mr. Billard in 1860, and the fruit of this was comparatively inferior. Some years after, Mr. Lefort sowed the seed of this variety, and almost all the seedlings proved to be spineless as well as its parent. The particular one now introduced by Mr. Joosten is named in France, Madame Edouard Lefort. There is still some question as to whether this particular variety of the English race will prove wholly free from mildew in this country; but good cultivators now know how to guard against mildew by setting the plants in comparatively cool spots where the ground will never become dry,—and where a little shading or mulching, as gardeners call it, will help these conditions. But even should the plant not prove to be a complete success in every locality, seedlings raised from them will probably prove better adopted to our climate. The effort ought to be generally made in the interest of so desirable a feature, and there is no doubt but what this great curiosity will be widely planted the coming season.

IMPROVEMENT OF FRUIT TREES IN SPRING-MANURING.—There is much complaint heard about one's poor fruit: the meagre yield. It is one's own fault. The case is take all one can, and give nothing—no help in return. There is too little fertilizers used. It would not really be amiss to manure the whole year round—nourishment is always acceptable to the fruit trees. Most welcome at the approach of spring. The tree then begins to bud. It must then have increased food, especially as the fruit harvest of the past season has severely drained its strength. Without losing time therefore, it is urgent to give a generous supply of manure. Old, knotty trees should be encircled with a trench in direct ratio to the highest point of the tree, holes here and there dug in it and filled with liquid manure. For younger trees, it would be best to trench 50 to 80 inches wide round the base. The ground thus dug up mixed thoroughly with well rotted stuff and thrown back into the trench. This same treatment is favorable to well trained fruit trees. A goodly supply of lime may be used—and not omit bone and other fertilizers either well mixed with the earth or sprinkled over, and then well turned under. Water will gradually soak better and deeper into this thoroughly manured deposit.

First and foremost air and light are indispensable to the working efficacy of fertilizers.

No good fruit can grow in a mass of leaves and branches. The careful gardener sees that air and light have fair play through the fruit trees. In a tangle of branch on branch there is plenty of work for shears and knife. No cautious pruning of a twig here and there; that only increases the evil, but away with the whole branch even were it as thick round as the arm. Past all cure, if fertilizers and pruning do no good—then the tree is ready for fuel, or perhaps for grafting. Strange so little value is placed on the latter—although so simple. It is only necessary to hit the right moment. The earlier the work is taken in hand, the more chances of success. February is better than March, and March is better than April. Even frost will not affect the tender graftings. The tree is thoroughly pruned, the branches thus are all short before they start to graft, each branch gets two to three cuttings set in either at top or sides.

This is the labor, and rich indeed in reward for the trouble. The grafted tree bears after a few years just as abundantly as the ungrafted of almost the same age.

MRS. BUMFORD SAMUEL.
Philadelphia. (From the German.)

NEW ONIONS.—Sometimes the differences between American and European catalogues are often indicated in a very striking manner. A French catalogue is now before the writer, in which special attention seems to be given in offering new varieties of onions. The descriptions are almost as full and complete as those of a peach or strawberry in an American list.

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INTENTIONAL SECOND EXPOSURE

FRUITFULNESS OF FIG TREES.—Everyone has read the beautiful parable of the barren fig tree. In that, the cause of the barrenness is referred to the poor soil. The owner would not cut it down, but applied manure, and dug around it in order to restore its fruitfulness. In modern times the fruitfulness is attributed to the work of an insect, and not to the hard work of the gardener. There are some fig trees which produce nothing but barren flowers, only producing pollen, and the little insect known as the blastophaga is supposed to carry the pollen from these male flowers to the fig trees bearing only female flowers, and in that way fertilize them, and which is supposed to result in greater productiveness. Those pollen-producing figs are called Capri, and the process of carrying the pollen to the fertile fig trees is called caprification; but it is by no means clear that what are known as fertile figs have not also staminate flowers mixed among the fertile ones, and in a large number of cases, therefore, are perfectly capable of self-fertilization. The writer of this paragraph has certainly found, upon examination, pollen-bearing anthers in the ordinary figs; and besides this, the fig-like Osage Orange, and many other fruits, is capable of coming to full perfection without any fertilization at all, so far as the production of what we call the fig is concerned. Of course, perfect seed inside the fig is altogether another matter. Still the fig growers of Italy do not think so, and they take care to have pollen bearing fig trees at certain distances throughout the fig orchard, and believe that it adds materially to the weight of the crop of figs per acre.

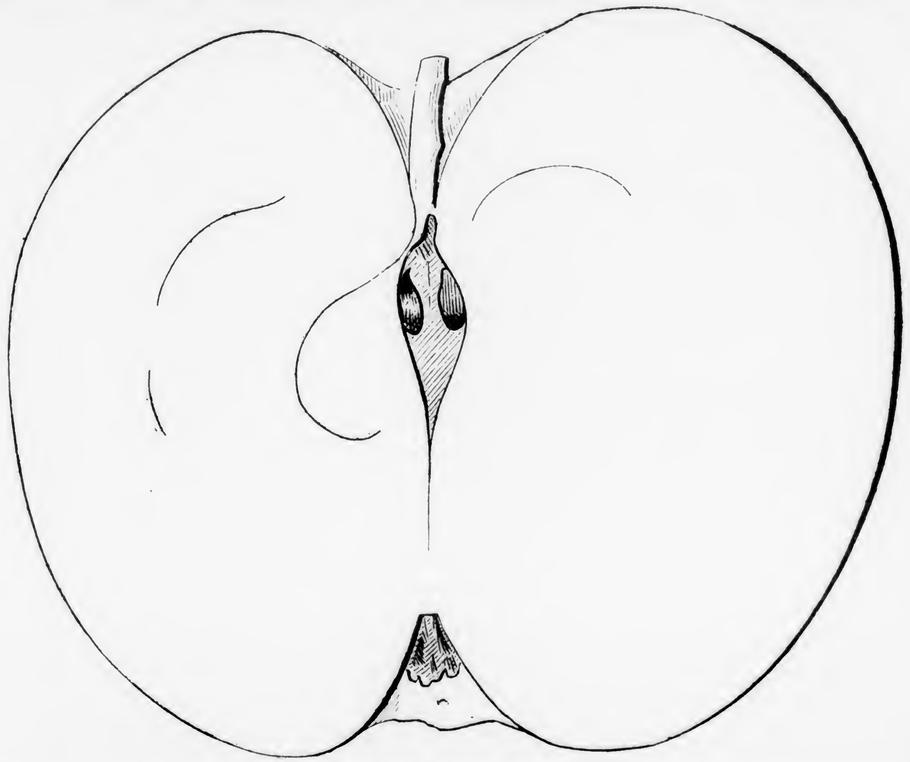
SALT FOR ASPARAGUS.—Many persons still cling to the notion that salt is a good manure for asparagus, and it is often so recommended in modern treatises on asparagus culture; but it is only valuable as an aid in attracting the moisture, which is very useful for the asparagus. Possibly it may also enter into the class of fertilizers to some degree; but its power of absorbing moisture is its chief value. It therefore follows that salt should only be used—if at all—in soils that are light and very dry, in sandy soils especially,—in heavy soils it would be an injury rather than a benefit. There are few better manures for asparagus than well-rotted stable manure, in light sandy soils. With a top-dressing of stable manure, well-rotted, placed over in the fall of the year, and dug in with a fork before the asparagus begins to grow, one may have as fine asparagus as is desirable. If one desires to have the blanched portion of the asparagus shoot tender and soft and not stringy, the plant should be set at least a foot beneath the surface; but this can only be well done in light soils. In stiff soils the plants are liable to rot when set deeply.

SUCCESSION OF CROPS.—It is ascertained, beyond question, that certain plants, like some animals, love company. Not merely the company of their own species, but prefer to live in the vicinity of species of another kind,—and this is not only true of a plant in regard to its company, but also in regard to its food. It has been noticed especially, that no crop seems to thrive so well after a crop of potatoes as the turnip. It does not seem to make any difference what kind of manure has been applied to secure the potato crop. The turnip seems to thrive remarkably under any and all. Indeed, it seems as though it was the pleasure of succeeding a potato crop, rather than the character of the manure, which enables the turnip to thrive so well under these circumstances.

THE SALMON BERRY.—What is known as the Salmon Berry, of the Pacific States, cannot well be classed with either the raspberry or blackberry, as we understand these terms in gardens. There may be no necessity for the new name of "Mayberry," as referred to in a recent issue,—"the Salmon Berry class" might do just as well, as too many common names are as objectionable as numerous botanical ones. Until better acquaintance with the real thing, this is, however, but a suggestion.

CLASSIFICATION OF THE TOMATO.—Since the tomato has come into general use in England, as it has long since done in America, the same question is arising as to whether it ought to be classed as a fruit or a vegetable. The judges have lately decided that it should be classed with fruits. Botanically, of course, it is a fruit; but when it comes to be a matter of gastronomy, one might also as well class the cucumber with fruits as the tomato.

THE RAMBOUR APPLE.—The French have under cultivation a number of varieties of Russian apples which they cultivate as varieties of the Rambour,—but which has been corrupted to "Rambo" in our country. It is believed that among these forms of "Rambour" the largest apple known is to be found. In our country possibly the honor has been awarded to another Russian known as the Alexander, but the Rambours will, we think, put in a stronger claim. Dr. Dieck, of Zoschen, in Germany, has introduced a new form of this variety which he calls Winter-Rambour, and which we are tempted to reproduce in order that the readers of MEEHANS' MONTHLY may report in case they find a larger one. If not, the Winter-Rambour must be left master of the field in the large-apple tournament.



THE WINTER RAMBOUR APPLE.

THE CULTURE OF THE PECAN.—It will be news to many, that the Pecan Nut is being planted for profit in so many parts of the Southern States, and has become one of the chief departments of agriculture. Very extensive groves of them now exist,—the "grove" being synonymous with the northern term of "orchard." It is said that they commence to bear with comparative freedom in seven or eight years from seed. The trees are set quite wide apart, and the land is used for other purposes until the trees grow close enough together to require all the land for themselves. There are many varieties among them,—the larger the nut and thinner the shell, the better the varieties are esteemed. They are propagated by budding and grafting. As much as fifty dollars' worth of nuts have been obtained from a single, mature tree. Like all trees, they are thankful for fertilization. The *Southern Florist and Gardener* gives an illustration of a beautiful grove, now sixteen years old, growing at Bamberg, S. C.

BIOGRAPHY AND LITERATURE.

SELF CONTENT.

"No plot so narrow, be but Nature there,
No waste so vacant, but may well employ
Each faculty of sense, and keep the heart
Awake to love and beauty."

PROF. ALBERT E. FOOTE.—The well known and respected originator of the agency for old or rare scientific books, Dr. Albert E. Foote, died while superintending his mineralogical exhibit at the Atlanta Fair on the 10th of October. He was born at Hamilton, N. Y., on February 6, 1846. He was eminent, especially as a mineralogist, and started his great Philadelphia agency through his own experience of the difficulties of getting needed scientific work and material for special studies.

THE HORTICULTURIST'S RULE BOOK.—This is the third edition, revised and extended, of an extremely useful work by Professor L. H. Bailey, and which is published by MacMillan & Co., of New York. It has become almost impossible for the human memory to retain a tithe of the valuable information, brought before mankind from week to week by horticultural periodicals, and thus the need of reference books, so that we may find what we want as occasion requires. This book is of that character. No horticultural library would be complete without something of this kind, and we know of no book that would "fill the bill," as the saying is, to better advantage than this. The method of making applications for the destruction of insects, and accounts of the injurious insects themselves; the destruction of fungus enemies, and the methods of getting rid of all kinds of destructive vermin; the care of lawn methods; the materials for grafting, cements and glues; planting seeds, protection tables for computing all manner of problems, post regulations, weather, horticulture, literary; and in fact there is scarcely anything that a lover of the garden may desire that will not be found in the "Horticulturist's Rule Book."

THE AMERICAN CHRYSANTHEMUM ANNUAL FOR 1895, EDITED BY MICHAEL BARKER.—This beautiful little work is illustrated with the portrait of John Thorpe, and also contains portraits of a number of gentlemen who are known favorably in connection with chrysanthemum culture. Everything that may be said to be comparatively new that has been brought out during the past year is gathered together within its pages. It is published by the Mayflower Publishing Company, Floral Park, N. Y.

PROF. C. S. SARGENT.—Only four new members were elected at the recent meeting of the National Academy of Sciences, one of these was Professor C. S. Sargent. His admirable work in connection with botany and intelligent horticulture renders the honor fully earned.

SEDUM AND SAXIFRAGA.—Mr. F. N. Tillinghast, Greenport, N. Y., says:—

"In your comment on my note in the August number of the Monthly the Latin words *sedeo* and *sedo* seem to have been accidentally transposed. *Sedeo* means to sit; *sedo*, to assuage. The latter, if I mistake not, is the word from which our English word "sedative" is derived.

Before writing the note mentioned, I turned to pages 73-4, of Vol. 1 of the "Native Flowers and Ferns of the United States," (which I always regard as authority) and read: 'The generic name given to the plant—*Saxifraga*—is from the Latin, signifying 'to break a rock,' and owes its origin to the fact that some of the species grow in rocky crevices, etc. However, your later view in regard to the derivation of the word, appears to me more likely to be the correct one, and likewise your derivation of *Sedum* from the Latin word meaning to assuage, or allay, seems almost certainly right—the text-books to the contrary notwithstanding."

We can only add that Mr. Tillinghast has the thanks of the conductors for the corrections.

TIMOTHY ABBOTT CONRAD.—There are a number of men of science who have recently passed away, and many of whom are still in existence, whose modesty has not brought them to the surface of scientific repute, but whose grand work, in a quiet and unpretentious manner has done immense service in promoting the advancement of science. Among these may be mentioned Timothy Abbott Conrad, who was one of that famous group of Philadelphia scientists who did so much to make that city renowned in the annals of scientific progress. The June number of *Popular Science Monthly* gives some account of his life and services, together with a portrait. He was born on June 21, 1803. His father, Solomon Conrad, was a man of strong scientific attainments, and in 1829 was Professor of Botany in the University of Pennsylvania. Timothy was elected a member of the Acadamy of Natural Sciences in 1831, and became one of its strongest representatives. His chief works were in connection with conchology; but he was equally strong in geology, palæontology, and other departments of science. It is generally believed that men of science have little imagination, and poetry is the last study a scientific man is supposed to indulge in; but this is a great mistake. Timothy Conrad is an illustrous example. He was a first-class poet, as well as a man of science. He was possessed with a fund of good humor, and enjoyed, especially, a humorous story, or to tell, in a humorous manner, of his funnier experiences. He once told the writer of this paragraph of an experience that he had on one occasion while collecting fossils along the Alabama River in a small country village. As he was walking along closely examining some rocks, with his bag of geological implements in his hand, one of three men, who had casually approached him, suddenly caught him by the neck, and exclaimed in a vigorous manner, that they had "caught the old rascal at last." It appears there had been some burglars in the neighborhood, and the burglar had been sought for by the townsmen. They took him before a Justice of the Peace, who could not be made to believe that the hammer, chisels, etc., in the geologist's bag, were other than implements of a burglarious character. He was in danger of meeting a burglar's fate at the hands of these limbs of the law, when Conrad remembered that he had a correspondent in the vicinity, who must know him by reputation, at least, and he insisted on this gentleman being sent for. He was able to identify him, and assure the Justice that Conrad was simply a harmless geologist, and that the tools were in no way connected with the burglar's trade. In this manner he escaped a burglar's doom. Whether he shook the dust off his feet, and departed from the town, Conrad did not say; but he was evidently much pleased with his narration of his lucky escape. He died at Trenton, N. J., August 9, 1877.

THE "BOOK-GARDENER."—One bright May morning, over twenty-three years ago, it was on a Sunday, Mr. J. Farrell, of Orange, N. J., was reading his copy of Meehans' *Gardener's Monthly*, when a self-styled "practical gardener" entered the room, and taking up the magazine, said, "Oh! is that the sort of a gardener you are? a book-gardener."

It is needless to relate that this unthinking man never advanced in his profession. He is "practical" still—at the spade and shovel. Gardening in this country would not be in the proud position it occupies to-day, but for the impetus given it by the horticultural press. Thomas Meehan was preaching and teaching sound horticultural doctrine when many of us were in swaddling clothes. WM. FITZWILLIAM. Orange, N. J.

Practical experience is essential to the make up of a good gardener. But the practical man who derides general intelligence is but a "poor stick." A sailor who had need of a new pair of pantaloons, gave an old one, as a pattern, to the Chinese tailor. The eminently practical Chinaman brought the new pair with two patches on the seat exactly as in the pattern. In the younger days of the senior conductor, progressive young men were often informed, by the eminently practical youth, that he could grow potatoes just as well without any knowledge of the countries they came from, the true nature of a tuber, or of the differences between the cabbage and cauliflower. In many cases they could,—but it was interesting to note, as the years rolled by, that while these excellent practical men never rose above raising potatoes and cabbages, most of those with a broader education became eminent and useful members of society.

GENERAL NOTES.

PITTSBURGH PARKS.—Philadelphia has the reputation of having within its park areas some of the prettiest bits of natural scenery in the world. But she must look well to her laurels. A Pittsburg paper tells us that in some of the park improvements now contemplated, one route "will be a miniature reproduction of the famous Wissahickon drive in Philadelphia." Pittsburghers have already two large parks, Highland and Shenley, of which they are justly proud.

CHRYSANTHEMUM EXHIBITION AT ATLANTA.—The *Southern Florist and Gardener* has arranged for a grand chrysanthemum show at Atlanta on the 12th, 13th, 14th and 15th of November.

STREET NOVELTIES IN FLOWERS.—The wonderful novelties in trees and flowers which street venders often present to an admiring public as the most wonderful things that ever grew or which will ever grow, are not confined to American cities. *The Gardeners' Chronicle* gives an account of a wonderful African water plant, peddled about the streets of London, which is to bear white, pink, yellow, red, blue, and purple flowers,—all on the same plant. A single seed could be purchased for the wonderful low price of six pence, which by a little haggling with the dealer, the editor of the *Gardeners' Chronicle* was able to get for a penny, and found that the wonderful plant was nothing more than the common Cashew Nut. The seed would float on the water for a few days before sprouting. After all this, people only traded on popular ignorance,—an ignorance in many cases by no means excusable in intelligent circles.

INTRODUCING RARE PLANTS OR FRUITS.—Raisers of new varieties of plants or fruits, sometimes complain, with some justice, that they are badly recompensed for the labor and trouble of raising new things; but the introducer may complain of this as well as the original raiser. One of our most energetic nurserymen, residing at Augusta, Ga., speaks, in a letter, of the time and trouble it takes to make the public acquainted with the value of new things. Many nurserymen raise a stock, only to burn it, and then give up trying again; but the correspondent, above referred to, states that although they may have to raise and burn, year after year they continue to raise, because the time generally comes, when after years of pushing, there is a profitable demand. In order to create this demand, they often have to give away numbers in every direction, so that the public may be made acquainted with the value of the article.

GENERAL INTELLIGENCE.—Botany and gardening are made branches of general education in the Old World, and consequently botanic gardens are far more numerous than they are with us. In France there are twenty-two, in Germany thirty-five, Great Britain and Ireland eleven, Indian Empire nine, Italy twenty-two, Russia fourteen, and even the comparatively significant islands of New Zealand have three, while there are but five public ones in the whole of the United States. While almost every cultivated person in the Old World is familiar with nearly every plant and tree that is seen more or less in everyday life, a large majority of our cultivated people would consider themselves pedantic to use even the commonest botanical name.

HORTICULTURE AND AGRICULTURE IN PENNSYLVANIA.—Recent legislation of Pennsylvania has established a Department of Agriculture, and it has been made the duty of the Secretary, in such a way as he may deem fit and proper, to engage and promote development of agriculture and horticulture, forestry and the kindred industries. This is, indeed, a broad field, and gives the commissioner an unlimited scope to exercise his own free judgment as how best to promote the industries specified.

ASPIDIUM MARGINALE.

BORDERED SHIELD-FERN.

NATURAL ORDER, FILICES.

ASPIDIUM MARGINALE, Swartz.—Frond evergreen, smooth, thickish and almost coriaceous, ovate-oblong in outline, one or two feet long; pinnæ lanceolate, broadest above the base; pinnules oblong or oblong-scythe-shaped, crowded, obtuse, entire or crenately toothed; fruit dots close to the margin. Gray's *Manual of the Botany of the Northern United States.*

So many of our native ferns are common to other countries as well as our own that it is pleasant to take up for consideration one that is distinctively American, and which, from the fruit dots being arranged nearer to the margin of the pinnule than is usual with its congeners, might be called the bordered shield-fern, though it appears not to have received any name that has become common among the people at large. Linnæus is the first botanist who made its acquaintance through his disciple, Peter Kalm, who brought it to his master from Canada. It is described in the *Species Plantarum* of Linnæus, in 1764, as *Polypodium marginale*. The genus *Aspidium* had not been formed at that period,—and hence in those early botanical times the genus was a very large one, no less than sixty-three species being named by Linnæus in the work cited.

The division under the name *Aspidium* is usually ascribed to Swartz, in the *Synopsis Filicum*, published in 1806, though it seems to have been in use by various botanists as far back as Houttuyn's time,—say 1778. Its first great dividing line from *Polypodium* was mainly in regard to the condition of the sori or mass of fruit dots. In *Polypodium* the sori bursts through the cuticle from the centre,—in *Aspidium* the cuticle remains attached at the centre, forming a shield-like indusium covering the apex of the cluster of fruit dots or sori. Other botanists, however, saw that some of these Adiantums had the indusium attached by the side instead of the centre, which gave the mass a reniform character, and the genus *Nephrodium* resulted, under which title it appears in Michaux's "Flora of North America," issued in 1863, as *Nephrodium marginale*. Pursh, in 1814, takes it back again to *Aspidium*; while in botanical works since his time it will be found under *Dryopteris*, *Polystichum*, or something else, for no less than six genera have been formed from the original *Aspidium*; but Dr. Gray, whose description is here adopted, has turned all our species back to the original genus. The lesson is an interesting one to the student of nomenclature, as showing that what is or is not a species is simply the opinion of an expert. The rule in this work is to describe under the name which has received the most general acceptance.

The evergreen character of this species gives it a special interest to the lover of ferns, who finds the woods and fields attractive all the year round. Those, who search for flowers only, have but a few months of enjoyment, and have to be on time at the blooming period of special things. Even then the season may be unpropitious. Such a day as Bryant describes may occur at the time for good collections:

"It is a sultry day; the sun has drank
The dew that lay upon the morning grass:
There is no rustling in the lofty elm
That canopies my dwelling, and its shade
Scarce cools me. All is silent save the faint
And interrupted murmur of the bee,
Settling on the silk-flowers, and then again
Instantly on the wing."

But the fern is interesting from the time its fronds begin to push above the ground till its fruit dots appear, and the dry remains furnish food for study even when gathered among the drifts of snow. Its shade-loving and moisture-seeking habits never lead it to localities where flowers "sicken" under a broiling sun. Forbidding places, from which the flower-seeker would turn aside, is often rich pasture for the lover of ferns. The

"——— stagnant fen,
Grown rank with rushes and with reeds,
Where a white lily, now and then,
Blooms in the midst of noxious weeds
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INTENTIONAL SECOND EXPOSURE

as Longfellow describes it, furnishes the fern hunter with a rich pasture at any time, though not even the white lily is blooming there. The fern structure is, indeed, as handsome and interesting as any flower.

Our present species has been used as illustrating the growth of the tree fern. The trunk of a tree fern is but an underground horizontal stem which has assumed an erect position. Mr. Robinson, in his little book, "Ferns in their Homes and Ours," says: "if we examine the crown of a tree-fern, or *Aspidium marginale*, we shall find circle within circle of little beads, the rudimentary fronds for succeeding years. As the outermost develop year by year, fresh ones are formed at the centre to keep up the supply. If we now imagine the tree-fern laid upon its side, just beneath the surface of the ground, and its crown turned up at the end so as to allow the fronds to assume an erect position, we shall have something very much like the *Aspidium*."

In most herbariums little more than fruit bearing fronds are preserved, as the generic, and in many cases the specific characters are derived from these. But the students of ferns in their native homes will often find more beauty in the barren than in the fertile fronds. In the present species this is particularly the case. In the early part of the spring, before the later fertile fronds appear, as seen on some shaded rocky hillside, few present a handsomer appearance. "Rocky woodlands," and "Rocky hillsides" are usually given as its favorite location. The specimen illustrated is a finer one than often seen, and grew among broken rock along the famous Wissahickon near Philadelphia, under the shade of the Hemlock Spruce trees.

It is one of the commonest of ferns, being found in Canada and through most of the eastern portion of the Northern United States, extending far south along the lines of the mountains. A correspondent of the "Bulletin of the Torrey Botanical Club," in Vol. XX, gives the range of altitude at which this *Aspidium marginale* has been found. Along the Atlantic coast from New Jersey northwardly it may be found anywhere from the sea level to 5,000 feet,—the latter being on White Top Mountain, Virginia. On Lookout Mountain, Alabama, it is found at 1,800. At 4,000 feet on Blowing Rock Mountain, North Carolina. In Garrett County, New Jersey, 2,700 feet. At Ontario, New York, Miss Vail collected it at 2,000 feet. In Northern Vermont it has been seen at 1,000 feet.

It is one of the commonest of ferns on that famous locality in the battlefield of Gettysburg known as "Round Top," growing among the broken rocks with a vigor rarely seen elsewhere. Numbers of plants are annually brought away by visitors to the historic place as mementoes of their trip, and planted in their gardens. For this reason it is becoming known as the Gettysburg Fern. It is probably from the cutting away of the timber, which has been done in order to give the spectator a better view of the battlefield, thus supplying a quantity of rotting wood, on which the plant delights to feed, that the plants seem to have here a more than usual luxuriance. The fronds are evergreen; but usually the barren ones disappear before the fertile ones mature. In extra luxuriant specimens, the barren ones of the past year have scarcely disappeared before the fertile ones of the present are maturing their spores.

A well developed plant at this stage is particularly beautiful. The barren fronds have a spreading tendency, while the fertile ones form a sort of crown in the centre of this emerald base. The mass of green fronds alone, arranged as they are by the fair hand of nature, forms a picture of beauty that even an artist of eminence might admire.

But there is yet another point which adds to its attractiveness. The clusters of sporangia are large for the size of the fern and of a shining black. The ebony dots along the margins of the pinnules are well set off by the pale green ground on which they are placed, and attract the commonest observer. Beauty of form has been claimed for the Cinnamon Fern, the Royal Fern, and some others, but it is questionable whether any could successfully compete in a tournament of beauty with occasional specimens on the Round Top of the Gettysburg battlefield. It is, however, one of our most beautiful native ferns, though growing under ordinary conditions. It varies some of its characters according to the locations in which it may be found growing.

EXPLANATION OF THE PLATE.—1. Complete frond from the Wissahickon, Philadelphia. 2. Reduced to show the outline of the early pushing frond, with unfolded ones. 3. Section of under surface, showing veins and veinlets, with the marginal position of the sori.

WILD FLOWERS AND NATURE.

COMING WINTER.

"All nature fell into a quiet sleep,
Like that through which we sink into a dream.
From the dim air the bluebird's mournful note
Was faintly heard again, as wearily
He floated on his airy journey far
Southward and sunward, and the cricket's chirp
Came from the long and matted grass that lay
Sere by the hedge-rows where the sparrow's nest,
Deserted now and ruined, lay quite bare."

—HOWARD WORCESTER GILBERT.

VARIATION IN THE DWARF SPLEENWORT.—Mr. Ellis B. Noyes, Richmond, Va., observes:

"Has any one ever noted a variation in the fronds of *Asplenium Trichomanes L.* according to the time of year in which they are produced? The fronds which pass through the winter are small and lie flat on the ground. The pinnæ of these fronds are oval or sometimes nearly circular. The stipe and rachis thread-like and irregularly curved. The fronds which are thrown up in the spring are erect and much longer than the others, with the pinnæ much farther apart, and the pinnæ are nearly triangular. The stipe and rachis of these fronds are quite stout.

"The later fronds seem to be always fruitful, the first only occasionally bear fruit."

CHANGES IN THE HABITS OF ANIMALS.—An impression prevails that insects and other creatures are so co-related with their food that they can scarcely exist unless the special food seemingly essential to them is ready to hand. This is believed true not only of food, but of their habits in general. The yucca and the yucca moth are so closely connected, that it does seem as if each is absolutely dependent on the other,—and one might well ask what would the chimney swallow do without chimneys in which to build its nests,—or cherry or peach tree gum with which to build them.

But just as the vegetarian would have to abandon his principles when there was nothing in the icy region but musk oxen and walrus to feed on,—so animal nature generally has the instinct of preservation to take to that which first comes to hand, when favorite resources fail. The chimney swallow built its nest somewhere before the white man constructed chimneys. The potato beetle had its home on the plains long before it ever knew a potato; and the writer has seen the common elm-leaf beetle, feeding voraciously in the mountains of North Carolina on a species of skull-cap—*Scutellaria*—touching apparently no other plant, in localities where Elms were absent. In Germantown gardens, half starved bees take to grapes and raspberries. In the same locality, the common robin has had hard times. There has been no rain from the 4th of July to this date (October 11th), and everything having become parched long since, insects that live on green food have not increased. The robins have taken to green seeds and fruits. The apples on the orchard trees are dug out as if by mice. An American golden pippin, with a heavy crop, presents indeed a remarkable appearance with what should be apples hanging on the trees like empty walnut shells. In brief, no creature will ignore the promptings of nature. It will change its habits when necessity demands.

A DWARF HORSE CHESTNUT, ÆSCULUS PAVIA.—"At Green Cove Springs" writes a correspondent wintering in Florida "there is at this time (April 15th,) a Dwarf Horse Chestnut that I have never seen cultivated in Northern gardens, and which is one of the prettiest of the many ornamental shrubs now coming into flower here. The habit of the plant is very much like the North Carolina Dwarf Horse Chestnut, but the flowers are of a bright red, and the Dwarf Horse Chestnut does not bloom in northern gardens till summer."

This is the *Æsculus Pavia*, which, when it gets further into the mountains, becomes a small tree. If it would assume the bushy habit in gardens, which our correspondent describes it to have in Florida, it would be a grand addition to our list of ornamental shrubs. The North Carolina species is *Æsculus parviflora*.

SYSTEMATIC BOTANY IN ITS RELATION TO A PROPER KNOWLEDGE OF PLANTS.—The establishment of a separate section for botany at the meeting of the British Association will be welcomed by all botanists. Mr. W. T. Thisleton Dyer, in his address as president of the new section, lamented the dying out of the natural history spirit, which under the late Professor Henslow produced such a man as Darwin. He remarked "that while the modern university student of botany put his elders to blush by his minute knowledge of some small points in vegetable histology, he could tell them little of the contents of a country hedgerow; and if they put an unfamiliar plant into his hands he was pretty much at a loss how to set about recognizing its affinities." This is a candid and generous admission on the part of one who has so largely contributed to introduce the laboratory spirit into botanical science. Although the tendency to develope laboratory work has led to a valuable increase of knowledge, its promoters probably did not forsee the consequences that would result from the prominence given to histological and biological questions in examination papers, and from the official appointment of botanists distinguished rather for their laboratory researches than for their natural history knowledge. The result has been that the class of botanists who study the affinities of plants, their habits and modes of life, have so far died out, that, until a new generation of "systematic" botanists has grown up, it may be difficult to adequately fill the posts where such a knowledge is requisite. If it be possible to augur anything from the address of a botanist holding the highest position in the kingdom, it implies that in the future more prominence will be given to a knowledge of the classification of plants and their natural history, as applied to agriculture, horticulture and forestry, including the diseases and enemies of plants. Laboratory practice will form a useful auxiliary to a knowledge of these branches, but, as Mr. Dyer candidly admits, it cannot replace them.

GEO. M. BERRINGER.

(Copied from the *London Pharmaceutical Journal.*)

It would seem that our college botanists, or at least some of our college botanists, who are making light of those who go over the world collecting plants, and arranging them in some systematic order, are making a huge mistake. Microscopic studies of vegetable tissue are all of great service, but of no value aside from the species they belong to. The histologist would be lost unless the systematic botanist had gone before and named his plants for him.

NELUMBIUM LUTEUM.—A remarkably interesting account of the yellow Lotus, *Nelumbium luteum*, appears in the Philadelphia *Public Ledger*, of August 20th, which gives a report of a number of naturalists who made an excursion to the New Jersey locality of this wonderful plant, near Woodstown. These naturalists have discovered that the plant propagates itself precisely as the potato does. At the end of the season the old plant dies, and only tubers are left to form plants for next year. The stolons which radiate from the stem like the spokes of a wheel are of enormous length. One which they traced must have been more than 47 feet in length. The tubers at the end of the stolons vary from three to eleven inches in length, creamy white with purplish dots, and the knife cuts through them roughly as in the case of the potato. Benjamin Heritage, who gave the history of the various investigations, described in careful detail the whole season's behaviour of the plant.

THE TWINING HABITS OF PLANTS.—It is well understood that climbing vines always turn in one direction,—some species turning in the direction the sun travels, and others twining in the opposite way; but it has hitherto been believed that each species invariably has its own particular direction. Professor Macloskie, of Princeton, has recently announced the discovery that there is not this regularity of twining in any one species, but that it depends upon the original starting of the plant, and that seeds taken from different portions of the seed vessel will twine in different directions. This is entirely a new feature, and will probably revolutionize much that has been taught in connection with the leaf arrangements of plants.

PHLOX PILOSA. — Mr. Jos. G. Barlow, of Cadet, Washington Co., Missouri, finds *Phlox pilosa* one of the most beautiful of the early wild flowers of that region. It is a beauty in most situations.

ACHERONTIA ATROPOS, THE DEATH'S HEAD MOTH.—Those familiar with English literature have read of the Death's Head Moth, and the curious tales connected with it. When seen in any locality it was regarded as an omen of a death in the vicinity within a few days,—and especially if it made the mysterious sounds it is capable of producing in some unknown manner, which it sometimes makes when flying around. The derivation of its name is evident from the cross-bones and skull which the light colored down on the thorax presents. It is on the whole probably the largest and most striking of all the moths of the old world. Before the introduction of the potato to Europe, it fed on various solanaceous plants, the Belladonna being regarded as its prime favorite. But since the introduction of the potato, this plant seems to be its chief food. A German publication, *Haus und Natur*, gives an illustration of the insect, showing in an instructive manner the various stages of the creature, and which is here reproduced. In the lower right hand corner is seen the pupa-case, in which stage it passes its resting career, until it emerges as the beautiful moth at the top of the picture,—the eggs finally developing the proud-looking caterpillar on the left. To many these creatures have anything but an inviting appearance,—but the general verdict will probably be that no prettier picture could be formed than by such a combination of the animal and vegetable world as here presented.

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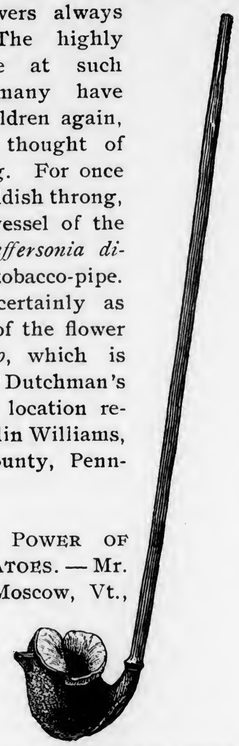
INTENTIONAL SECOND EXPOSURE

JEFFERSONIA DIPHYLLA, AS A TURKISH PIPE.—Fanciful resemblances, whether in clouds, in rocks, or in flowers always attract attention. The highly cultured may smile at such childishness, — but many have wished themselves children again, and felt bad at the thought of being no longer young. For once we have joined the childish throng, and figure the seed-vessel of the pretty wildflower, *Jeffersonia diphylla*, as a Turkish tobacco-pipe. The resemblance is certainly as strong as in the case of the flower of *Aristolochia Sipho*, which is popularly known as "Dutchman's pipe." It is from a location reported by Mr. A. Newlin Williams, Solesbury, Bucks County, Pennsylvania.



JEFFERSONIA DIPHYLLA.
(Mature Seed-vessel.)

THE VEGETATIVE POWER OF CELLAR-GROWN POTATOES. — Mr. Timothy Wheeler, Moscow, Vt., September 13th, says:—"On page 177 of the MONTHLY, under the head '*Planting Potatoes*,' you say—'the plant itself produces small potatoes in the axils of its leaves.'

This I never saw, but I often find very small new potatoes on sprouting potatoes in spring while in the cellar, but this last spring I found some large enough to cook—two inches in diameter. This astonished me. I planted three of them, but nothing appeared above ground all summer, so, just now I dug them up and they still remain as they were at planting.

Last fall our potatoes were stored directly on the *cellar bottom-ground*, with *no flooring*. Previously the potatoes have been stored in bins with *floors*; so it appears that on floors the new potatoes are *small*, while if they lie on the soil-ground-dirt the new potatoes are *large*.

I first thought I would *cook* them and see how they appeared, then I thought to keep them and plant them next spring. I don't know which to do. I will hold them a while."

It is certainly a very interesting fact that these potatoes, brought up in the dark, refused to sprout. By all means plant them again. We ought to learn much of the secrets of nature by such observations as these.

COREOPSIS PUBESCENS.—With interest I read your note on *Coreopsis grandiflora*. It is a very fine plate. Now in regard to the leaves, I found both forms together. In Wayne and in Carter Co., it grows by the thousands, so I have had a good chance to study the plant. The leaves are from very finely cut, to lanceolate. On some plants they are finely cut, and some plants have lanceolate and cut leaves together. But I must say that your plant does not look like the *Coreopsis grandiflora*. It looks like *Coreopsis pubescens* Ell. That you say it grows three to four feet high, confirms me more in my belief. *Coreopsis grandiflora* hardly reaches four feet, but *pubescens* does usually. HENRY EGGERT.

East St. Louis, Ills.

Mr. Eggert is undoubtedly correct, and he has the conductor's best thanks for calling attention to the error. As stated in the chapter, there was some doubt of its identity though going by the name of *C. grandiflora* in gardens and seed catalogues. The chapter itself will hold good for *Coreopsis grandiflora*, but the engraved name on the plate must be changed to *Coreopsis pubescens*.

POLYGONUM POLYGALOIDES.—With a good specimen of this somewhat rare and pretty species of *Polygonum*, Mrs. Susan Tucker, of Cheney, Washington, says :—"*Polygonum polygaloides* is quite common here. It grows where water stands until late in the spring. It is often accompanied by *Downingia pulchella* and *D. elegans* (which is more common). Later the same ground is covered with *Grindelia* (probably *G. nana*.)"

PROLIFEROUS DAHLIAS.—Mr. Wm. F. Bassett, of Hammonton, N. J., sends a head of a Dahlia with numerous small Dahlia flowers forming instead of the ordinary Dahlia petals. These conditions are always interesting to the students of morphology. They are not confined to the Dahlia, but are occasionally seen in many other flowers.

GENERAL GARDENING.

A SYRIAN GARDEN.

Each wand'ring Zephyr as it blows
Scatters the odors of the rose,
Or from its wings the fragrance sheds
Gathered amid carnation beds;
The rosy lotus spreads it flowers
To catch the fountain's cooling showers;
The Persian Jasmine's shining stars
Peep through the gilded lattice bars,
Or gently fall like flakes of snow
Upon the emerald turf below.

—MARY BAYARD CLARKE.

TRAVELERS' TALES OF GOOD OLD ROADS.—It appears, from the following from a correspondent, the "good old Roman roads" are pretty much like the "enormous pippins" so many old people handled "when they were young." He says, "at page 187 it is stated that, travelers tell us that the old Roman roads are far superior to the modern road. If they say so, they do not tell the truth. In going to the top of Vesuvius, the usual route is from Resina by a route path several miles to the foot of the cone. On the way you go for several hundred yards over a part of the *Appia via*, one of the longest of the old Roman roads. It is not, and never was, a good road. It is about fifteen feet wide, paved with blocks of trap rock of irregular size and shape, varying in diameter from six inches to two feet. Trap is a very hard volcanic stone wearing smooth by use. The road is perfectly preserved and is as good for travel as it ever was. The stones are polished by the ancient traffic, and are very slippery and unsafe.

There is no ditch on either side of the road. No good road is possible without good drainage ditches at the side."

CHAS. DISSEL'S CONSERVATORY, OVERBROOK.—Mr. Charles Dissel is a well-known lover of beautiful flowers. His grounds present a most attractive appearance in the summer season, and, in the winter time, it is a rare treat to be permitted inside of his conservatory. It was the privilege of the writer to visit it in the early days of March, and the display of flowers was, certainly, a most pleasing one. A great many of the commoner flowers were used to produce masses of bloom, such sorts, particularly, as azaleas, cyclamens, cinerarias, hyacinths and carnations. *Primula obconica* was used extensively, it flowers so profusely. So also was another one, *P. floribunda*, a yellow flowered and very pretty sort. Trained over the doorways were two *Streptosolon Jamesii*, each one in bloom, and presenting a splendid appearance. They were hidden in flowers. The rosy yellow flowers were in great bunches, on long, drooping shoots, three feet or more in length. The plants were not in pots, but growing in the ground.

A rare treat to me was a *Bougainvillea spectabilis*, trained overhead to the rafters, and breaking down almost with its wealth of rosy pink flowers. Mr. Emory, the gardener, told me he had to root-prune it a little to throw it into flower. Another uncommon vine, as full of flowers as it could be, was the *Thunbergia laurifolia*. This has blue, trumpet-shaped flowers, which remind one very much of those of the paulownia. It is excellent for winter blooming.

Besides these and many other flowering plants, much attention is paid to tropical plants, grown for beautiful foliage, and at all seasons of the year there is always something of interest in this conservatory and in the greenhouses. JOSEPH MEEHAN.

TREES SUITABLE FOR HOOP POLES.—While discussing the general subject of forest management under the head of "a Walnut tree grove," it was remarked that in Europe much of the profit of timber plantations came from the thinning first for hoop poles, and subsequently for hop and other poles. A correspondent suggests that this must not be applied to the Walnut, so far as hoop poles are concerned, as this wood is too brittle for that. The oak and the maple furnish most of the material for barrel hoops in this section. The oak has the advantage in ultimate timber.

CARE OF CITY TREES.—In most large cities side-walk trees belong to the abutting property owners. In Philadelphia an effort was made last year to have these trees taken care of by a public official. But no legal method could be devised that would afford a prospect of bettering the condition of things. The Horticultural Society was referred to, but no practical suggestion was evolved. But it does seem as if the desired good can only come through the action of some private society. They know better than public officials where to get intelligent agents. The Brooklyn Tree Planting and Fountain Society is a model in this respect. In hopes that it may be followed by similar societies in other cities, the following sketch of the scope of the Brooklyn one is here given:

"Members of the Tree Planting and Fountain Society shall be entitled to the privilege of placing their trees under the care of the Society. It shall be the duty of the Society to exercise a watch-care over trees so placed, and to notify the owners when they require special attention, and to explain the nature of the ailment, and, if the owner wishes the Society to do so, it shall furnish skilled labor to do whatever may be required, and render a bill to the owner for an amount sufficient to cover expenses. This supervision is not expected to include injuries caused by accidents which are liable to occur at any time. Such injuries may be reported to the Society by the owner, and it, if requested to do so, shall repair said injury as far as possible, and render a bill to the owner for an amount sufficient to cover expenses.

"Any member of the Society shall be at liberty to call at the office, during office hours, from 10 o'clock A M. to 2 o'clock P. M., and consult upon any matter pertaining to arboriculture.

"Occasional circulars and bulletins, containing timely and useful information, shall be prepared, and a copy shall be sent to every member.

"Members wishing trees removed or new trees planted shall be at liberty to place such work in charge of the Society, to be done by it. The Society shall furnish competent men to do the work and render a bill to the owner, or to the person ordering the work, as may be agreed upon, for an amount sufficient to cover expenses. And it shall be understood that when the person ordering the work done, whether owner or agent, shall accept the same at cost price, the Society shall not guarantee the life of a tree so set, and said owner or agent shall be responsible for any damage that may be caused while performing the work, unless such damage results from lack of due care on the part of the employees of the Society.

"It shall be understood that when labor or material, or both, are furnished at cost, payment for the same shall be made upon completion of the work, or delivery of material, and without expense to the Society. In the event of delay in payment of such bills in five days the Society shall be at liberty to add to the bill ten per cent. of the amount of the same."

GAS TAR FOR FENCES.—While it is undoubtedly true that gas tar will destroy the fungus which produces rot in wood, and, so far as that goes, ought to have a strong preservative quality; yet the dark color, itself, has a great attraction for heat, and the wood decays more rapidly under a certain charring process than it would if it had been left untarred, and this seems to be the case when the tarred wood is placed under ground. The writer of this paragraph recently saw some wood, taken from the earth, that had been tarred for the purpose of forming conduits for electric wires, and the wood would rub to pieces under a little working of the finger and thumb. In many cases, it is evident that tar has not near the preservative character it is credited with.

TRAINING MAGNOLIAS.—In a friend's garden, recently, we saw a Chinese White Magnolia plant along a narrow space between the building and the garden fence, and in order to make the most of the space, the magnolia had been trained in the shape of a fan. It was covered with its white blossoms. It had a very peculiar effect. Whether this effect would be equally pretty to all or not, depends, of course, upon the taste of the observer. In this case, the form was certainly in harmony with the cramped surroundings. This species of magnolia can be trained to many various forms, at the option of the owner. Usually they are left to their own free will to grow as they please; but with a very little help from the pruning knife, some very beautiful pyramids may be formed. They are good subjects for summer pruning.

CITY RESERVOIRS.—It is often said but there is no reason why the government of a city or town should not be conducted on business principles as easily as a large firm or organization manages private business,—but after an experience of some fifteen years in assisting in the government of one the largest of American cities, the writer regrets to express his belief that it is impossible. In no way is this incapacity shown better than in providing water for the uses of the population. There must be a highway system,—a park system,—a water system,—and other systems. Each one of these must be worked independently of the other. If only a park system, water system and highway system, could all be under one comprehensive management, how different things would be! The reservoirs, public parks, great streets and boulevards, and other public works, would all help to develop one another. Philadelphia saw this in theory some ten years ago, and tried to put it in practice. The mayor was to be made responsible for everything. Is it not so in all well managed businesses that one head should have control? The result has been from "the frying pan into the fire." A large reservoir was built right on a spot which had already been partly developed, at an expense of many thousands of dollars, as a grand boulevard that would have been one of the leading ornaments of the city,—the reservoir itself costing several millions of dollars and even yet useless, when the same results could have been obtained by a natural depression that would have added largely to the attractions of the city's park system. The theoretical responsibility of a mayor could not avert this monstrosity in government,—and it is the same the world over.

A RESERVOIR IN THE BLUE HILL RESERVATION.

It is probably more due to fortunate accidents that some cities get the advantage of combined parks and water supply. At least, Boston is fortunate in having this advantage. Herewith is an illustration of a reservoir in the Blue Hills reservation,—the waters simply impounded in its own little valley. The grounds around it serve for park purposes. This could often be done in other places.

CARE OF CITY TREES.—In most large cities side-walk trees belong to the abutting property owners. In Philadelphia an effort was made last year to have these trees taken care of by a public official. But no legal method could be devised that would afford a prospect of bettering the condition of things. The Horticultural Society was referred to, but no practical suggestion was evolved. But it does seem as if the desired good can only come through the action of some private society. They know better than public officials where to get intelligent agents. The Brooklyn Tree Planting and Fountain Society is a model in this respect. In hopes that it may be followed by similar societies in other cities, the following sketch of the scope of the Brooklyn one is here given:

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INTENTIONAL SECOND EXPOSURE

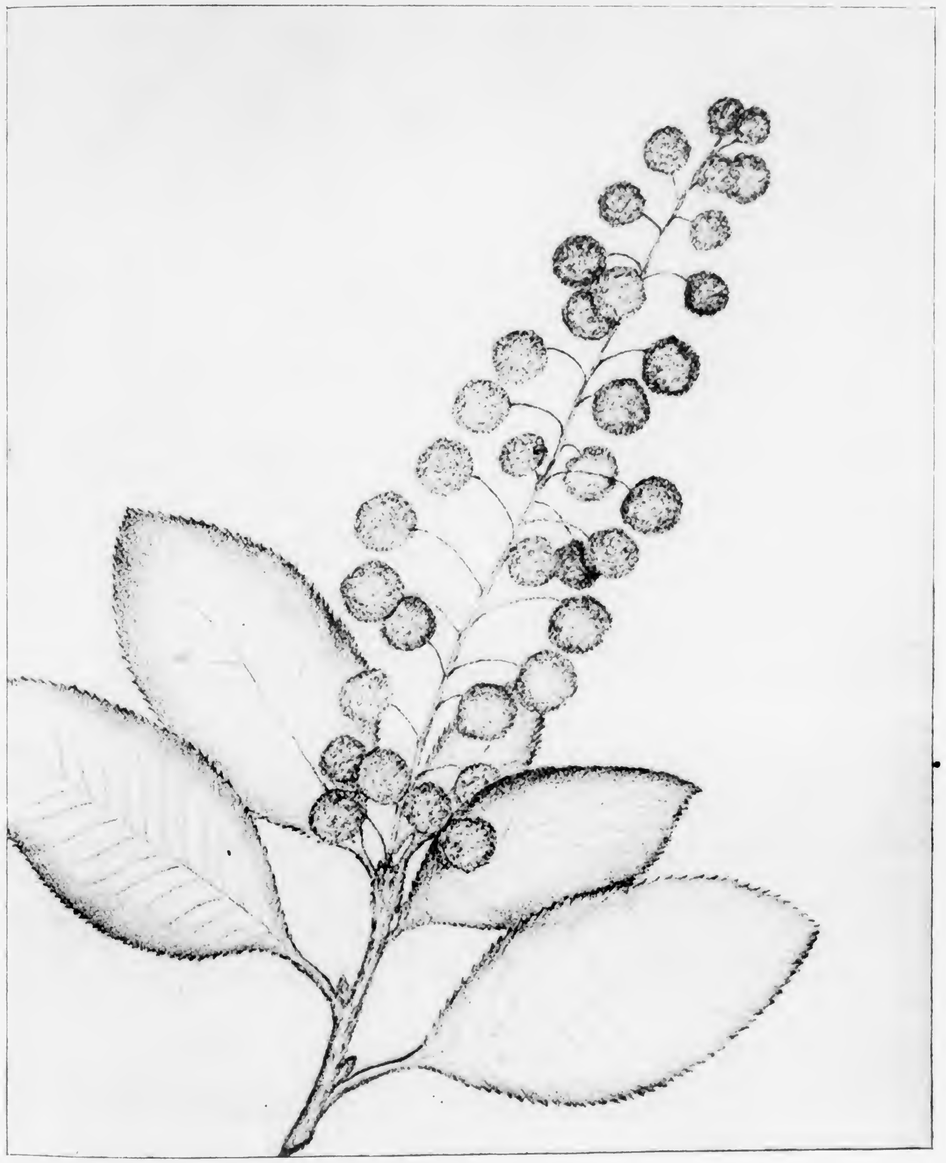
GOOD GARDEN SOIL.—What is, or what is not, good garden soil, is often a great question. The customer often complains to the nurserymen that, though he planted his trees in the very best soil, yet he had little success. Very few people seem to understand that good soil is one in which the atmosphere can freely circulate. The earth must not allow the air to circulate to such an extent as to lose its moisture; but it must have an abundance of small spaces which will contain small quantities of air before plants will thrive. We sometimes speak of "air plants," but in truth, all plants are air plants, no matter whether growing on rocks or trees, or whether growing in the earth. Air is of far more consequence to the roots than to the leaves. When, therefore, we have a stiff, clay earth to deal with, we make a good soil by applying sand, or vegetable matter which, when it roots, will leave small spaces in which air may be collected. It is for the same reason that we crush hard clods, for a hard clod has no air spaces. When broken to pieces,—pulverizing is the technical term,—we simply give the chance for atmospheric air to spread throughout the whole mass. For the same reason, what is known as a wet soil is a bad soil, because water drives out the air. There is no air in earth which is water-tight. It has been noted in MEEHANS' MONTHLY that the use of a hole in the bottom of a flower pot is not so much to allow the escape of water as it is to permit fresher air to flow in the spaces of the earth when the water leaves it. In the language of gardening, a good soil is one which is perfectly "aerated."

CLIMBING ROSES.—In some parts of the country, lovers of roses have what they especially distinguish as rose gardens,—that is to say, a portion of the grounds devoted wholly to rose culture. In the Old World, these rose gardens are usually narrow beds, with box-edging borders and gravel pathways; but in most parts of our country, gravel pathways are too hot for comfort, and the pathways between the rose beds are made of grass,—that is to say, the rose beds are cut out of the lawn. Whatever forms of beds are decided upon, they should always be comparatively narrow, so that anyone can get in among them to admire the flowers or cut the buds without having to struggle in among the thorns. General styles of beds, and general methods of treatment, are required, according to the classes. For instance, the tender kinds that suffer somewhat in the winter season have to be planted so that the branches can be bent down in the winter time, and covered with leaves, and even with earth, where the branches can be bent down near enough to the surface to admit of this excellent protection. Good effects are often produced by planting climbing roses. These, of course, have to be trained to stakes,—or as is sometimes the case, low arbors of iron or wood are constructed over which the long straggling branches are tied. The effect of a long rose arbor, when the flowers are in bloom, is particularyly charming. Unfortunately, few of the climbing roses have odor,—at least those varieties that have been derived from our wild Prairie Rose. The Sweet Briar and English Dog Roses, however, are to be classed among the climbing varieties that are very fragrant. Some of the Hybrid Tea Roses are hardy, and in those parts of our country, where the winters are not too severe, are very effective among the climbing rose class. An old variety, known as the Gloire de Dijon, is particularly useful in this respect, and is very fragrant. The old class of roses known as Noisettes, are also mostly classed among the climbers, and are very useful for flowering in the fall. They seldom bloom much in spring; as they bloom at the end of the growing branches, which, of course, brings them into the fall season. On the whole, few gardening operations give more pleasure than a well arranged and judiciously managed rose garden, and especially when good use is made of the climbing varieties.

ALFALFA.—Alfalfa, under which name the plant long known as Lucerne is becoming popular, is found to be a great blessing to dry regions. It is not only useful as green fodder, but makes excellent hay. It is estimated that there were 125,000 acres of alfalfa in Kansas last year.

HICKORIES FROM ROOT CUTTINGS.—Mr. A. S. Fuller tells "American gardening," that the Hickory family can be propagated from root cuttings. Those who have a good variety of Pecan nuts, and no opportunity to increase by grafting, may profit by the hint.

DESTROYING INSECTS IN GARDENS.—Even when the utmost care is taken, there is a disinclination to use preparations of copper or arsenic in vegetable gardens or small fruit patches, for fear of poisoning. Hellebore, which is not poisonous to human beings, is preferable. An ounce of Hellebore powder dissolved in three gallons of water, makes a good solution. It can be applied with a syringe, or, on a small scale, by a rubber sprayer.



ARCTOSTAPHYLOS DIVERSIFOLIA.—SEE PAGE 233.
(Berries red.)

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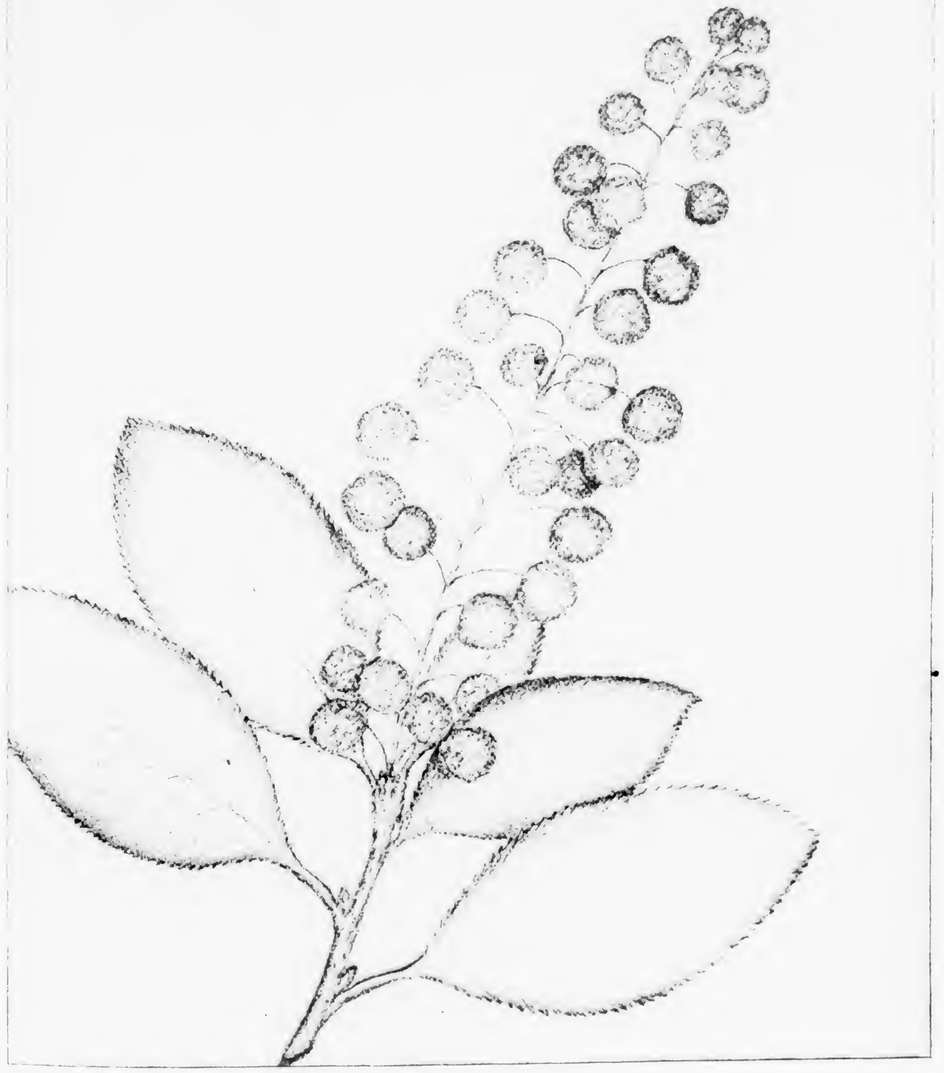

ARCTOSTAPHYLOS DIVERSIFOLIA.—SEE PAGE 233.
(Berries red.)

INTENTIONAL SECOND EXPOSURE

ODOR OF THE AILANTUS. — Correspondent says:

"A friend of mine has a seedling ailantus tree growing in her yard close to a fir which has seen its best days. She would rather have a good ailantus (provided it is not the staminate sort that smells unpleasantly when flowering) than the dilapidated fir, and to this end would cut the fir down to give the ailantus a better show. The point is, is there any way of telling whether the seedling, which is now 5 or 6 feet high, is staminate or pistillate? The latter sort, I understand, is devoid of the disagreeable odor referred to. Perhaps you could enlighten me on this point in some number of the Monthly."

There is no way by which the sex of an ailantus can be determined until it flowers. More has been made of the differences in the odor of the male and female ailantus than the facts warrant. A careful comparison of a bunch of one with a bunch of the other, made last year, showed that the female flowers had just as strong a scent. After all we find that the supposed disagreeable odor depends a great deal on first impression. Many who have these trees say they do not mind the odor. Near the office of the writer are a dozen large trees, and there are a number of dwelling houses about the same distance from the trees. No serious objection to the odor has ever been made by any one.

TREES AND CLIMATE.—It was always a subject of regret to the writer of this paragraph that the subject of forestry was not taken up from a practical standpoint. The world wants timber. It cannot get along without timber. We should strive against a scarcity of timber, and the planting of timber should be encouraged in every way possible. Timber is getting scarce in America, and it is the part of wisdom to look forward to the probable scarcity and guard against it. It was from this standpoint that the writer commenced the agitation, which has resulted in the forestry movement; but it passed out of the hands of the practical man, and got into the hands of the followers of Marsh; and the vague generalizations of the work known as "Man and Nature" were taken as the basis of the forestry movement. Trees are, in the main, the *result* of climate, and not the *cause* of climate. Although in a slight degree forests may influence climate, it is only in a collateral and extremely incidental sense. A spring never dried up through the absence of a forest; and it is doubtful whether one drop of water more fell on any area covered by trees, than if clothed with a carpet of grass. This may be said as a generalization; but everything that is acted on acts in return. There could be no attraction unless the law of repulsion also prevailed. When Western Kansas was once settled the modern forester advised the planting of trees wherever practicable. The tree planter was told that the result of the planting would be a modification of climate, and that the terms "droughty Kansas" would be one searched for in our coming history. The writer of this paragraph advised them to open irrigating ditches, if even the water had to be supplied from artesian wells, but the advice was ignored. The tree planters made themselves believe that they had modified the climate, and through these plantings the dry belt was being gradually narrowed. The past year has upturned all these misty conclusions, and it is a pleasure to note that those warmly interested in the development of Western Kansas have come at length to see that they must look to irrigation as a chief element for the future prosperity of that section of the country.

THE KENILWORTH IVY.—The Kenilworth Ivy is a kind of snap-dragon,—the curious class of flowers that children like to play with. By pressing the flower laterally between the finger and thumb, the petals open like the mouth of some wild beast. The family name is *Antirrhinum*, and the Kenilworth Ivy is *Antirrhinum Cymbalaria*. It receives its name from being very common in the old mortar walls of the celebrated Kenilworth Castle. It is fortunate that so pretty and common a name can supplant the hard latin one. It seems to thrive in the driest mortar, and in our own country it has been found an admirable thing for planting among soft mortar in old walls. The writer passed an old wall recently, on which the Kenilworth Ivy had found a home. In almost every crevice the whole surface of the wall was a mass of little purple flowers and pretty green leaves. It is one of the arts of good gardening to make pretty effects from the special beauties of some garden favorite.

THE SAGO-PLANT.—Every one knows the Sago Plant, botanically, *Cycas revoluta*,—that is, they suppose they know the Sago Plant, for really this plant furnishes but a very small proportion of the Sago known in commerce. The one which furnishes the greater proportion is a palm from Bornea, known as *Metroxylon Sago*, and another species of the same family, known as *M. Rumphii*, and which is probably a mere variety of the former, gives some. Another palm which yields sago is the *Arenga saccharifera*. The palm which produces the chief sago in India is the very common one of our conservatories,—*Caryota urens*. The sago from our own *Cycas revoluta* is chiefly used in China, and seldom reaches this country as an article of trade. The trunks of matured trees, —that is, trees of about ten or twelve years old,—are rotted, and the sago obtained by maceration. When bruised and decayed the particles of starchy matter that we know as sago sinks to the bottom, and the cellular material is floated off.

VARIEGATED LEAVED SHRUBS.—Those who visit the temperate regions of the Old World, especially Great Britain, come back charmed with the beautiful effects which variegated foliage has in gardening; and American nurseries are overrun with orders for similar plants for growing in our country. It does not seem to be understood that the white variegations which please so much in the countries referred to, get burned out by our summer suns, and that the beautiful effect of the same plants in other countries cannot be achieved here. Possibly no plant is so effective in this line in the gardening of the Old World as the Silver Variegated variety of our Ash-leaved maple; but all attempts to have the same satisfactory results in our country have failed. Yellow tints to the foliage, however, do very well here, as also do varieties with blood-tinted leaves. In these lines, American gardening has a large field to select from.

NEW OR RARE PLANTS.

ARCTOSTAPHYLOS DIVERSIFOLIA,—A RARE AND BEAUTIFUL MANZANITA.—The "Channel Islands," off the coast of Southern California, near Santa Barbara, present to the visitor some of the finest scenery and the most delightful climate to be found on our coast.

In addition to these attractions they have a very interesting flora; many species of plants which are common on the mainland, grow on these islands with such luxuriance that they can scarcely be recognized, even by the trained eye of the botanist.

One of the most attractive of the many interesting species indigenous to the islands, is the *Arctostaphylos diversifolia*, also called Comarostaphylis diversifolia, found on Santa Cruz Island, first described by the late Dr. C. C. Parry, from specimens found growing near San Diego.

The plant under consideration, a small branch of which, with berries, is shown in our illustration, page 231, forms a small, handsome tree, from six to ten or more feet high, and when in July it is covered with its terminal racemes of white, waxy, globose flowers, or, later, with its brilliant red berries in conical bunches, tipping each and every branch, it forms an object in the landscape, which, to those who are so fortunate as to see it in its prime, will be among the most pleasant recollections of their visit.

This species is also found on the summits of the Santa Inez Mountains on the mainland, but it is quite rare.

LORENZO G. YATES, F. L. S.

Santa Barbara, Cal.

XANTHOCERAS SORBIFOLIA. — New plants continue rare for a long time after their first introduction. This is the case with *Xanthoceras sorbifolia*. It belongs to the horse chestnut family, but has leaves like a mountain ash, or Sorbus as it is some times known. The purple and white flowers are very attractive, and are produced on quite young plants. It is indeed rather a shrub than a tree. Dr. Gattinger writes that it is very beautiful at Nashville.

SOPHORA JAPONICA.—A bunch of legumes, looking like a cluster of necklaces, sent by Mr. Moon, of Morrisville, Pa., is a reminder of how rarely seen are specimens of this beautiful Japan tree. Several large trees have bloomed in Philadelphia gardens this year, but the tree is not generally known through the country. Its growth is about equal to that of an apple tree, though with a somewhat more lofty and less spreading habit. The leaves are formed much as are those of the common Robinia or yellow

locust, but smaller and more delicate, and the bark is of a peculiar olive green by which it may be distinguished when not in leaf. The flowers are in racemes much as are those of the locust, and are born in great profusion when the tree reaches the flowering age. Sometimes the whole head of the tree is covered with blossoms so as to almost conceal the leaves. Like many leguminose trees there is often a want of balance in the vigor of the stamens and pistils in the flowers. Both the organs are present, but one or the other class is impotent, hence single trees rarely produce seed. Once in a while stamens and the pistil will perfect, and the tree is fertile. At other times the stronger pistils must have pollen from other trees, when several are growing near each other. But as its value lies in the form and flowering, seed bearing is of less consequence.

SUCCESSION OF FLOWERING IN SOLIDAGO.—Mr. Ellis B. Noyes, Richmond, Virginia, says:—

"I would like to know if you or some of your readers can give a list of the Solidagos in the order of their time of flowering. I have just collected a Solidago which I make out as *S. Canadensis*, but such a list as I speak of would be a great help in many cases."

A collection of Solidagos, or, as they are popularly called, Golden Rods, would be of great interest in the autumnal flower garden, and the succession of flowering in the several species would be interesting to know, even from this point of view,

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IMPROVEMENT IN THE CANNA.—The improvement in the Canna has been somewhat phenomenal among all the improvements of the florists. The *Canna Indica* and our own Florida *Canna flaccida* are the parents of the race, but Nature surely would not know her own child when looking on the work of modern florists. American florists are believed to be in the van with these improvements; but some of the European improvers are inclined to contest this. Damman & Co., of Naples, send pictures of some feathered like gladiolus flowers, and the expanded petals reach one foot across! How far have Americans gone in this direction?

FRUITS AND VEGETABLES.

THE ROBENA PEACH.—Dr. Thomas Taylor, Washington, D. C., sends a peach which he proposes to call Robena. It had somewhat fermented when it came to hand, but bore evidence of good qualities considering the date, October 10th, very late for the latitude of Washington. It may be a successful competitor for popularity among late ripeners. It is a yellow freestone.

BEES DESTROYING FRUITS. — I have been very much bothered for a number of years past by the destruction of my unbagged grapes by bees, probably two-thirds of each uncovered bunch being ruined, all varieties, except possibly the Salem suffering equally.

This year I neglected to bag them and have been much surprised to observe that scarcely a grape had been punctured, and can only account for it on the ground of the extremely dry weather which has kept the skins sound, and prevented the bees breaking through the skins.

It would be interesting to know if the experience of others coincides with mine, and if so their explanation. Very truly,

THOS. H. SHOEMAKER.

Germantown, Philadelphia.

That honey bees destroy grapes, raspberries, and other fruits is a well known fact, though bee-keepers and bee-journals dispute it. The creatures are not able to bite the skin, but, in the grape particularly, they start near the attachment of the berry with its stalk where it requires scarcely any force to thrust the tongue through. There are some bee-keepers who are the essence of meanness—people who keep bees without taking the slightest interest in providing flowers, and who line their pockets out of the predatory practices forced on the industrious bee. It is too bad that these useful creatures should be led to their destruction by the want of conscience in their owners; but there is nothing left for those troubled as our correspondent is, but to hang up bottles of sweetened liquid out of which the little thieves cannot escape. It is believed that bees would not steal fruit, if the bee owner provided flowers for them. It is easier to gather honey than to suck grapes.

CHOROGI.—Inquiry was made in a recent issue of MEEHANS' MONTHLY, whether the new vegetable, *Stachys Sieboldi*, had been used much in America, but there has been no response. It may be concluded that it has not yet found its way to any great extent in American gardens. The amateur gardener has usually to take these novelties in hand. The market gardener grows only that for which there is already a demand. In order that the readers of the magazine may be better acquainted with it, the following account is reproduced from the Bulletin of the Cornell University agricultural experiment station, No. 37—for 1891:

Chorogi is a small perennial plant, with the aspect of peppermint or spearmint. It belongs to the mint family, and to a genus (Stachys) which is well represented in this country. In fact, there is some doubt among botanists as to whether it is really distinct from a common wild stachys (*S. palustris*) which grows in wet places over a large part of North America. Its value to the gardener lies in the great number of crisp white tubers which it produces just under the ground. These tubers are thickened undergound stems, like the potato tuber. Fig. 8 is an illustration of a plant as it appears in November, after being dug and having the earth washed from the roots. The detached tuber is natural size, and represents an average specimen as grown upon naturally poor but well enriched sandy soil. Although the tubers are small, they are so abundantly produced as to make the plant a heavy yielder. We (presumably the officers of the station) imported tubers in the winter of 1889–90. They were in poor condition when planted, and the growth during 1890 was small. The plants were allowed to remain without protection during the winter, and this year they have spread so as to fill a row a foot and a half wide and have produced great numbers of tubers. We have eaten the tubers in several ways and I do not hesitate to pronounce the plant the most important acquisition to our list of secondary vegetables which has been made in several years. The tubers can be cooked in a great variety of ways, or they may be eaten raw. They are fried, roasted, baked, pickled, preserved, stewed in cream, and made into various fancy dishes. The tubers may be dug as wanted during the winter, and ordinarily enough of the plant will be left in the ground to propagate it the following year. The greatest fault with the vegetable is the fact that the tubers shrivel and spoil if exposed to the air for a few hours. This will interfere with their market qualities. They can be kept in earth, however, and the French market them in moist shavings, or in sawdust.

THE PINEAPPLE IN FLORIDA.—The culture of the pineapple in Florida is of comparatively recent introduction. There is a small section of the state, the lower portion of the Indian River, and in the vicinity of Lake Worth, which seems to be never visited by frost,—even in this past remarkably eccentric season, the frost line did not reach that section. So, that after the test of the present year, pineapple culture in that section may be looked upon as a permanent commercial horticultural industry. It is surprising how many can be raised on a small piece of ground. Ten thousand plants can be planted on an acre, and as each, bears one large fruit, the calculation of the product can easily be made. Of course, as in most of these wholesale productions, large sums go for transportation and for commissions to agents; but, allowing for all these, the shipper can realize about $15.00 a hundred. Much more than this has been realized in very successful instances. The fruit is continually ripening from April to November, and, indeed, it is said that ripe pineapples can be cut at almost any time of the year. It takes very rich soil to get large fruit,—and those who have rich soil will consequently receive the largest profit.

FORMATION OF NAVEL ORANGES.—It has been shown, in *Meehans' Monthly*, that the Tangerine Orange, and possibly some other varieties, are formed through the effort of the orange to make a secondary fruit at the apex of the original one, only that it failed to make any original at all. In other words, the Tangerine Orange is a well-developed secondary fruit. How this can be brought about, may be readily understood by carefully examining the oranges known in the markets as the Navel variety. In these cases, a small orange can often be found at the apex, sometimes of considerable size. When this small one is largely developed, and the larger one wholly suppressed, then we have the Tangerine.

WHITE HEADED ASPARAGUS.—As most people understand, what is known as French asparagus is usually tender from apex to base. The general impression is that this results from peculiar methods of blanching. A correspondent, however, insists that there is a distinct variety, which is more likely to produce these tender stalks than the ordinary red top or green top varieties. If this is a fact it is outside of the conductors' knowledge. Perhaps some correspondent can tell more about it.

LOCALITY FOR APPLE GROWING.—A correspondent from Lowell, Mass., writes that he has recently become so much interested in horticulture that he would like to go into the fruit-growing business on a large scale, and is anxious to know what section of our Eastern States is the most favorable to apple culture. This is one of the class of questions which often comes to the conductors of the magazine that cannot be easily answered. One who is anxious to invest in this manner should visit locations, and note the growth of apple, pear, or other trees in the vicinity on a small scale,—and if they are found to thrive, and do well on a small scale, it would be a fair indication that a larger enterprise might be successful. Western New York and the Hudson river region have long been famous as among the best apple-growing sections of the United States, although some portions of Virginia and Tennessee are now inclined to enter into a contest for this supremacy. But even in these locations there are many places unfit, as well as some few places superior,—and nothing but personal investigation in the manner already suggested would be a safe guide for a novice.

GUMMING OF PEACH TREES.—Mr. Joseph Wright refers to quantities of gum running down the stem of his peach trees. He inquires the cause. What is known as gumming in the peach tree will arise from many causes. The peach borer, which works on the main stem near the ground, will occasionally cause the gum to flow considerably, — and it is chiefly by the appearance of this gum that the peach grower is made aware of the existence of the worm. Any puncture of the bark is likely to produce gum, and those small organisms known as bacteria will frequently locate in the bark of the peach, and cause gum to flow in large quantities. This is as true of the cherry as of the peach. The writer of this paragraph has collected as much as a quarter of a pound of gum from a single attack of bacteria in one location on a cherry tree. In small quantities there would be no injury to the tree from this exudation of the gum,—in large quantities it would undoubtedly be exhausted. It is, however, a useful indication that something is wrong with the tree.

PICKING APPLES AND PEARS.—The fruit may be considered ripe when it commences to fall during calm weather, although no mistake should be made, because there is always some damaged fruit coming down. Fall fruit should be picked shortly before it is ripe, but Winter fruit should be allowed to stay on the trees as long as possible, even till All Saints' Day, paying no attention to the light frosts occurring about that time. The best time for picking is during dry weather and sunshine.

If picked when it rains, the fruit will not keep. Select a fine day, preceded by a couple similar ones. If there is a North wind, so much the better, because, being naturally dry, it closes the pores of the fruit.

Stretch under the tree a piece of cloth, or strew around some straw or hay to catch the fruit that may fall off. Pick as much as possible by hand, being careful not to damage the buds for next season.

Translated from a Flemish paper.—JULES WELLENS.

THE PHYLLOXERA IN CALIFORNIA VINEYARDS.—The very destructive insect, Phylloxera, so well known now in connection with the culture of the foreign grape, is extending its ravages in California. It does not injure to any great extent the roots of the American *Vitis riparia*, and the vineyardists of California are using this stock freely on which to graft the European kinds.

A FINE PECAN TREE.—Miss Pinckney, writing from Darlington, South Carolina, says:

"There is a very fine pecan-tree near where I am staying, and it is said to be fifty years old, and bears heavy crops, and yet there is not another anywhere near. Is not that a strange state of affairs?"

BIOGRAPHY AND LITERATURE.

A GREEN OLD AGE.

But, when bare and wintry woods we see,
What then so cheerful as the hollytree.
—SOUTHEY.

PROF. C. V. RILEY. — Professor Charles Valentine Riley was killed by a fall from his bicycle in Washington, D. C., on the 14th of September. He was born in London in 1843, and received a classical education in one of the German universities. He came to America in his 17th year, settled on a farm in Illinois, and attracting the attention of Mr. Emery of the *Prairie Farmer*, became attached to it, and aided considerably by his literary ability in giving the paper the high renown it enjoyed in the early part of its career. By the encouragement of D. B. Walsh, he turned his special attention to entomology, in which branch of natural science he soon became a leading authority.

He subsequently became State Entomologist of Missouri, by virtue of which he earned the honorary title of Professor. From 1878 to 1894, he was connected with the Agricultural Department of the United States, and his work aided much in giving renown to the work of the United States Government. His useful life will long be remembered, especially by the discovery of the nature and history of the grape vine disease, which he traced to a root-aphis, now well known as *Phylloxera vastatrix*. His remarkable discoveries in connection with the fertilization of Yucca flowers by a night moth which he named *Pronuba yuccasella*, is fresh in the minds of most readers of garden literature.

THE SOIL,—ITS NATURE, RELATIONS AND FUNDAMENTAL PRINCIPLES OF MANAGEMENT, by Professor F. H. King. Published by McMillan & Co., N. Y.

This, a little book, is one of the Rural Science Series, edited by Prof. L. H. Bailey. Only those brought in close contact with cultivators can fully appreciate the immense losses accruing from ignorance of the nature of soil. The writer of this paragraph was once consulted as to what was supposed to be a perfect mystery. The party in question had determined to have an avenue of Cucumber trees. Nearly all the trees grew on the first planting, except about a dozen at one end. The owner planted this dozen again, again and again,—always with the same fatality. The examination disclosed that just at that portion of the line, a stratum of blue clay was deposited below the surface, and the holes dug for the trees were little wells from which the water could not escape. The successful trees were on a substratum of sand, from which water could rapidly pass away. Had the planter of these trees been familiar with the nature of soil, as developed in this little book, it would have saved him several years of annoyance. There are few who would not profit by this seventy-five cents worth of experience.

HAND-BOOK OF WEST-AMERICAN CONE-BEARERS.—Professor J. G. Lemmon, of Oakland California, has now issued a third pocket edition of his hand-book. It is pleasant to notice that there is such a demand for the work. The Coniferæ of the Pacific coast hitherto was known to a great extent only through the botanical descriptions in scattered scientific works. The descriptions here are in popular form—any intelligent English reader can understand. Even English names are given to those species that have had none from the American people, in the hope that there may be as much uniformity among those names as among the botanical ones. The price for single copies is one dollar.

ROBERT BROWN.—Another eminent botanist of the generation now passing away has departed in the person of Robert Brown. He was born at Caithness, in Scotland, March 23, 1842, and died on the 26th of October. He botanically explored much of our northwestern coast, as well other parts of the world.

ORIGIN OF THE WORD FLEUR-DE-LIS.—Please allow me to say a word on the "Fleur-de-Lis" subject (if it is not too late). I think you are mistaken in thinking that the words or name "Fleur-de-Lis" in referring to the *Lis* can be or should be translated "Flower of the Lily" or Lily Flower. I have no doubt the word "*Lis*" is a contraction of the word Louis, the o and the u being dropped. Thus, Louis = Lis.

The "Fleur-de-Lis" *was* the emblem of the Bourbon party and family, and thus was largely the national flower of France. But in the overthrow of the Bourbon kings the national flower went with it, *Napoleon* adopting the "*violet.*" I think, therefore, M. de Varigny is correct in saying that France has no national flower *at the present time;* still the "Fleur-de-Lis" is largely used in decorations, etc., often much conventionalized, but probably its suggestive name prevents its *full adoption* as the national flower.

The contraction of "Fleur-de-Louis" into "Fleur-de-Lis" was very natural, as you will see if you will *pronounce aloud the words, and* FAST. The "Lis" NOT being a *lily*. I don't believe the French *ever said it was!*

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New York, October 23d.

DAVID HOSACK.—There appears in *Popular Science Monthly* for October a sketch with portrait of David Hosack, after whom the extensive genus of American plants, *Hosackia*, was named. He was born August 31, 1769, in New York City. He studied in the University of Pennsylvania at Philadelphia, where he obtained the degree of Doctor in Medicine. He subsequently studied medicine in Edinburg and London. His interest in botany awoke at Edinburg,—but was finally instructed by Curtis, author of "Flora Londonlusis." He returned to New York 1794, and commenced practice as a physician. In 1795, he was appointed Professor of Botany in Columbia College. He founded a botanic garden on what is now the part of New York City lying between Fifth and Sixth avenues and Forty-seventh and Fifty-first streets. It covered about twenty acres. He named it after his father's home in Scotland, the Elgin Botanical Garden. The famous Pursh was gardener here for a time. It had at one time fifteen hundred species of American plants growing there. He was compelled, for want of means, to sell it to the State, but it soon went to ruin. He died of apoplexy in New York on December 22d, 1835. He had good power to communicate the love of botany to others. Prof. Delile, who wrote the Flora of Egypt, and the celebrated Dr. Torrey, were among his pupils.

E. W. BULL, ORIGINATOR OF THE CONCORD GRAPE.—The death of Mr. Bull is announced as having occurred on September 27. His name should ever be held in grateful remembrance as the originator of the Concord grape, which, in a great measure, revolutionized grape culture in America. The variety brought the grape home to every one, as no variety ever did before, and gave pleasure and profit to thousands. Dr. Lamborn brought to the attention of the readers of MEEHANS' MONTHLY, a year ago, the duty of starting a national testimonial to Mr. Bull; but Dr. Lamborn died before his desire could be realized. In a quiet way, however, some attentions of this kind were paid to Mr. Bull, with which he was much gratified. One of these was undertaken by Mr. Jacob W. Manning, at the Nurserymen's Convention, and a handsome purse presented to him. He was 89 years of age at his decease.

THE EARLY FLORA OF THE TRUCKEE VALLEY.—Bulletin No. 24, of the Agricultural Experiment Station of the Nevada State University, of Reno, Nevada, is wholly taken up by F. H. Hillman, giving an account of all the flowers of that region, which are in bloom before mid-summer. As strict botanical works seldom furnish this useful information to the plant collector, the book will be hailed by botanists, as well as by the mere flower-lover, as a valuable contribution to their favorite science.

INSECTS AND INSECTICIDES.—By Clarence M. Weed, published by Orange Judd Company, N. Y. This is a second edition of a particularly useful book. If it were not for destructive insects, the cultivators lot would be an easy one,—but there is so much now known of insect habits and ways, and methods of destruction made so much plainer by books like these, that their lot is happier, by a great deal, than it used to be.

BARON SIR FERDINAND VON MUELLER.—Few botanists in distant parts of the world are better known in the United State than Baron von Mueller, of Melbourne, Australia. In California and Florida especially, where the Blue Gum trees have proved in many respects a public blessing, the author of that beautiful work "Eucalyptographia," is not only well-known, but highly esteemed. A strong point in Baron Mueller's character is his practical turn of mind. He does not rest satisfied with his laurels as an explorer in the field of botany, a namer and describer of species, and a leader in botanical classification; but he is ever on the alert to make botanical science helpful in relieving the miseries or advancing the material interests of mankind. Should any vegetable product discovered in Australia be likely to have practical utility in the United States, he is at once active in American correspondence to make the fact known; while his own people are kept continually informed of foreign plants likely to advance the material interests of his own country. Though now in his seventieth year, he is still in the full vigor of manhood, and there is fair promise of continued good work from him for years to come. The illustration here given presents him in the insignia of the honorable orders which foreign governments have conferred on him. He was born at Rostock, Germany, in 1825, and emigrated to Australia in 1847. He has been government botanist for the Colony of Victoria since 1852, and director of the Melbourne garden since 1857, which, however, he resigned in 1873. He was created a Baron by the King of Wurtemberg in 1871. The popular appreciation of his useful life-labors is not better illustrated than by the fact, that a ninth edition of his "Select plants" adapted to cultivation in Australia, has just been issued! The book is as useful in America as in Australia, and is valued all over the world.

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DAVID HOSACK.—There appears in *Popular Science Monthly* for October a sketch with portrait of David Hosack, after whom the extensive genus of American plants, *Hosackia*, was named. He was born August 31, 1769, in New York City. He studied in the University of Pennsylvania at Philadelphia, where he obtained the degree of Doctor in Medicine. He subsequently studied medicine in Edinburg and London. His interest in botany awoke at Edinburg,—but was finally instructed by Curtis, author of "Flora Londonlusis." He returned to New York 1794, and commenced practice as a physician. In 1795, he was appointed Professor of Botany in Columbia College. He founded a botanic garden on what is now the part of New York City lying between Fifth and Sixth avenues and Forty-seventh and Fifty-first streets. It covered about twenty acres. He named it after his father's home in Scotland, the Elgin Botanical Garden. The famous Pursh was gardener here for a time. It had at one time fifteen hundred species of American plants growing there. He was compelled, for want of means, to sell it to the State, but it soon went to ruin. He died of apoplexy in New York on December 22d, 1835. He had good power to communicate the love of botany to others. Prof. Delile, who wrote the Flora of Egypt, and the celebrated Dr. Torrey, were among his pupils.

E. W. BULL, ORIGINATOR OF THE CONCORD GRAPE.—The death of Mr. Bull is announced as having occurred on September 27. His name should ever be held in grateful remembrance as the originator of the Concord grape, which, in a great measure, revolutionized grape culture in America. The variety brought the grape home to every one, as no variety ever did before, and gave pleasure and profit to thousands. Dr. Lamborn brought to the attention of the readers of MEEHANS' MONTHLY, a year ago, the duty of starting a national testimonial to Mr. Bull; but Dr. Lamborn died before his desire could be realized. In a quiet way, however, some attentions of this kind were paid to Mr. Bull, with which he was much gratified. One of these was undertaken by Mr. Jacob W. Manning, at the Nurserymen's Convention, and a handsome purse presented to him. He was 89 years of age at his decease.

THE EARLY FLORA OF THE TRUCKEE VALLEY.—Bulletin No. 24, of the Agricultural Experiment Station of the Nevada State University, of Reno, Nevada, is wholly taken up by F. H. Hillman, giving an account of all the flowers of that region, which are in bloom before mid-summer. As strict botanical works seldom furnish this useful information to the plant collector, the book will be hailed by botanists, as well as by the mere flower-lover, as a valuable contribution to their favorite science.

INSECTS AND INSECTICIDES.—By Clarence M. Weed, published by Orange Judd Company, N. Y. This is a second edition of a particularly useful book. If it were not for destructive insects, the cultivators lot would be an easy one,—but there is so much now known of insect habits and ways, and methods of destruction made so much plainer by books like these, that their lot is happier, by a great deal, than it used to be.

BARON SIR FERDINAND VON MUELLER.—Few botanists in distant parts of the world are better known in the United State than Baron von Mueller, of Melbourne, Australia. In California and Florida especially, where the Blue Gum trees have proved in many respects a public blessing, the author of that beautiful work "Eucalyptographia," is not only well-known, but highly esteemed. A strong point in Baron Mueller's character is his practical turn of mind. He does not rest satisfied with his laurels as an explorer in the field of botany, a namer and describer of species, and a leader in botanical classification; but he is ever on the alert to make botanical science helpful in relieving the miseries or advancing the material interests of mankind. Should any vegetable product discovered in Australia be likely to have practical utility in the United States, he is at once active in American correspondence to make the fact known; while his own people are kept continually informed of foreign plants likely to advance the material interests of his own country. Though now in his seventieth year, he is still in the full vigor of manhood, and there is fair promise of continued good work from him for years to come. The illustration here given presents him in the insignia of the honorable orders which foreign governments have conferred on him. He was born at Rostock, Germany, in 1825, and emigrated to Australia in 1847. He has been government botanist for the Colony of Victoria since 1852, and director of the Melbourne garden since 1857, which, however, he resigned in 1873. He was created a Baron by the King of Wurtemberg in 1871. The popular appreciation of his useful life-labors is not better illustrated than by the fact, that a ninth edition of his "Select plants" adapted to cultivation in Australia, has just been issued! The book is as useful in America as in Australia, and is valued all over the world.

BARON VON MUELLER.

INTENTIONAL SECOND EXPOSURE

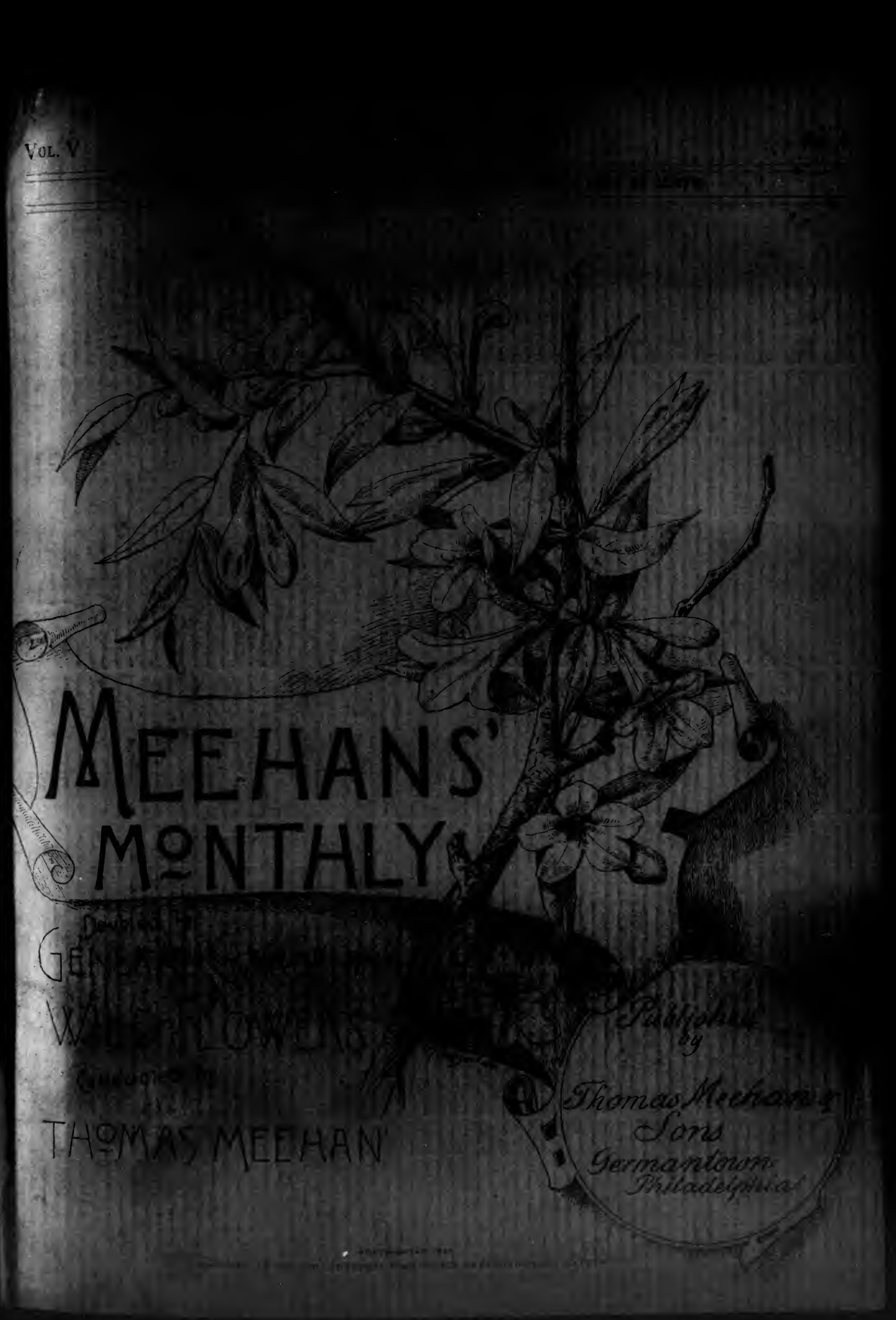
GENERAL NOTES.

CORRESPONDENCE WITH THE MAGAZINE.—Letters of inquiry as to the names of plants, or other matters, continually come to the office of MEEHANS' MONTHLY. Many persons are considerate and send stamped envelopes or cards, or in some way provide for return postage. The simplest and best method is simply a bare postage stamp or two. Letters cannot be attended to on the spur of the moment; and the stamped and already addressed envelopes, in a majority of cases, get separated from the letter of inquiry. Hundreds of stamped and addressed letters are in pigeon holes in this office. To be sure one might get a pin and fasten the card or the stamped envelope to the letter of inquiry, but it takes longer frequently to do this than it would to write the address or affix the stamp to the envelope. Another source of trouble is the separation of specimens of plants from the letters of inquiry. The name of the sender should always be attached to the parcels themselves. This paragraph is indited from a little vexation of this character. A party from Tennessee sent a very small piece of the sample to be named. It so happens a leaf was essential to identification, and the answer went accordingly. About a week afterwards good specimens came without any name of the parties sending. A week, however, elapsed, and hundreds of letters have since come to the office,—in the meantime the original sender's name could not be remembered, and he will no doubt complain of the want of courtesy of the conductors in not notifying him of the proper name. We say in brief avoid stamped and self-directed envelopes. Enclose merely a stamp or two for a reply, and always write the name of the sender on every parcel.

PRIORITY AS THE RULE FOR NAMING PLANTS. — The objection to the wholesale changing of the names of plants now going on in some quarters, is meeting with as much dissent in the Old World as here. M. Crepin, the great Belgian Monographer of Roses, has recently recorded his objections. Commenting on this, Dr. Maxwell T. Masters says in the *Gardeners' Chronicle*,—"Botany is not for the glorification of present workers, nor for the canonisation of those that are past. It is for the advancement of the knowledge of all that concerns the life and attributes of the vegetable kingdom. Those who wantonly put obstacles in the way incur a very heavy responsibility."

"Wantonly" is perhaps used hastily. The botanists who are urging the changes are among the best wishers for the advancement of botany, and honestly believe their work is for the ultimate good of the science. They believe that the earliest name should be the name *to be* generally adopted. There is no doubt of the truth of this position. Their mistake seems to be in confounding that which *should be* with that which *is*. In many cases changes can be made before general adoption occurs,—but the case is materially altered after general adoption has taken place. When these good botanists see as some of wider experience in literature have been able to see, that the weeding out of a name, improperly given in the first place, is impossible, the attempt will be abandoned.

THE PHYLLOXERA LAWS.—Since the late Professor Riley discovered that the grape vine was subject to a very serious root malady caused by the work of a small aphis, known as the *Phylloxera*, foreign governments arranged a very silly system of certificates, which it was supposed would prevent the introduction of the insect. It was well known that the creature had already obtained a foothold, and it was impossible for any introductions to make the matter worse. The only result of the certificate system was to place endless annoyances in the way of the interchange of plants between one country or another. It is now said the prospects are that these absurd regulations will soon be totally abolished. The insect is not feared so much, since grafting on American roots has been resorted to.



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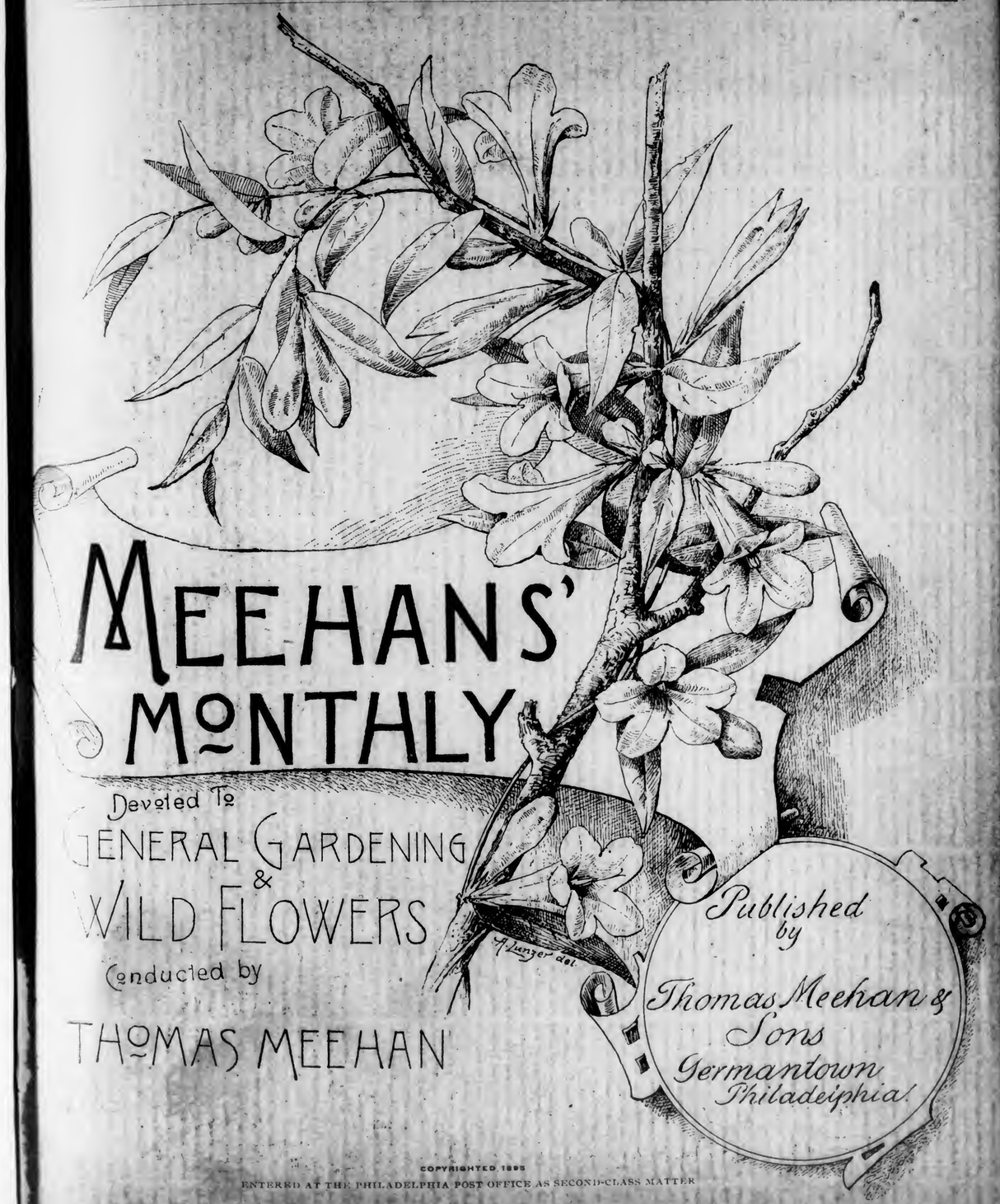

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GENERAL GARDENING
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WILD FLOWERS

Conducted by
THOMAS MEEHAN

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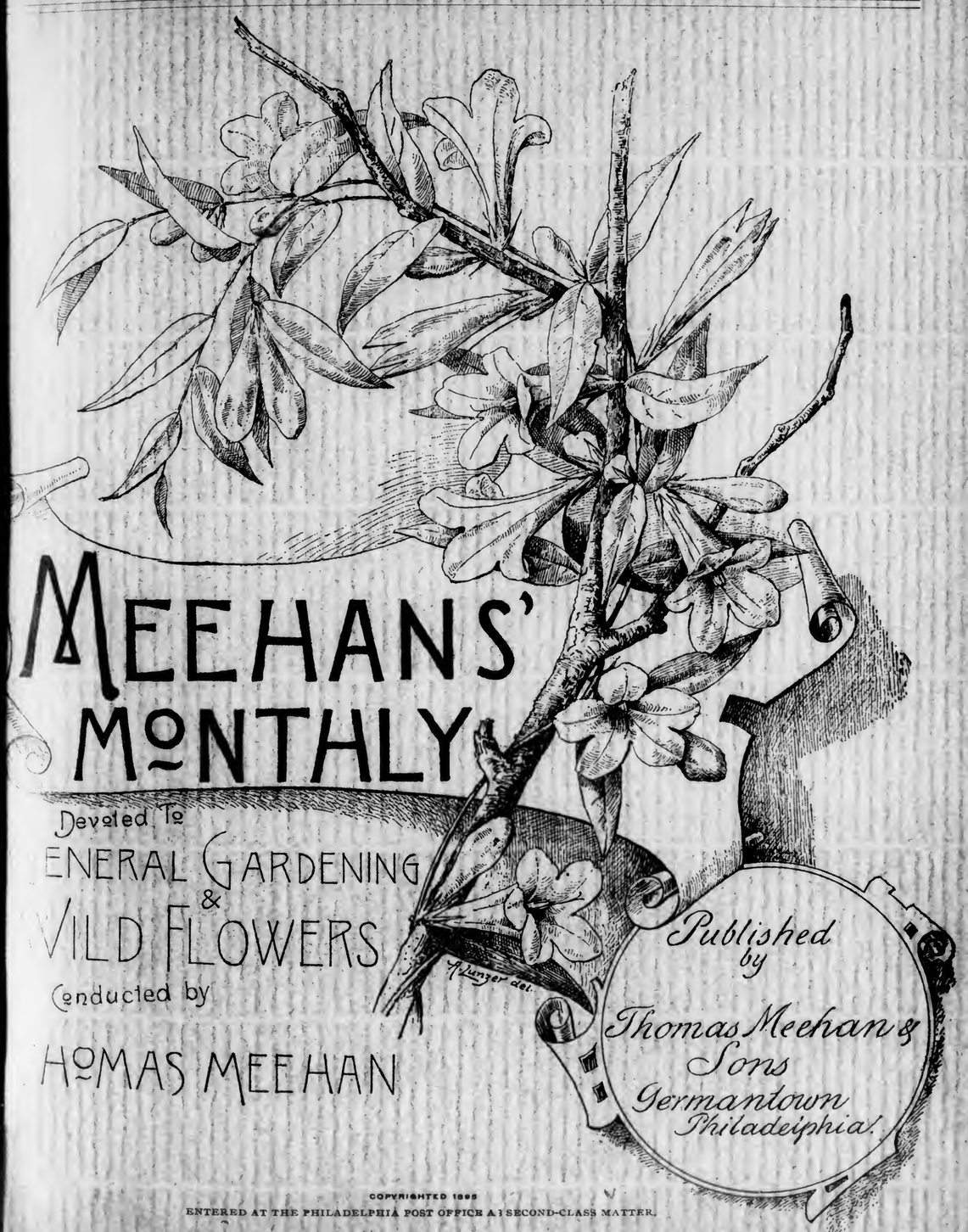

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JANUARY 3 1894

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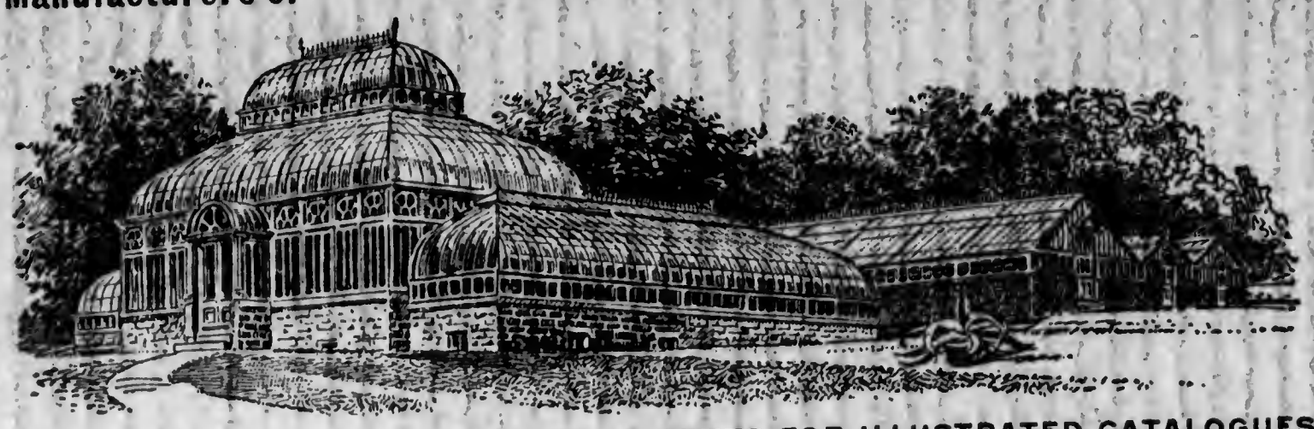

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